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Technical Report 554

GEOMAGNETIC ACTIVITY AND THE EQUATORIAL SCINTILLATION OF SATELLITE SIGNALS

M. R. Paulson

19 May 1980

Prepared for Office of Naval Research (Code 465) Arlington, VA 22217

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AN ACTIVITY OF THE NAVAL MATERIAL COMMAND

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Commander

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ADMINISTRATIVE INFORMATION

The work reported here was performed under element 61153N, project RR03208, task area RR0320801, and work unit 532-MP41 by members of the EM Propagation Division with assistance from personnel of the Naval Communications Area Master Station, Guam. Extensive assistance by personnel at the NASA tracking station, Dandan, Guam, was also received. This report covers work from March 1978 to December 1979 and was approved for publication 5 May 1980.

Released by Dr. J.H. Richter, Head EM Propagation Division

Under authority of J.D. Hightower, Head Environmental Sciences Department

ACKNOWLEDGEMENTS

Uhf and L-band satellite signal measurements used in this report were made by personnel at the NASA Tracking Station in Dandan, Guam, under the direction of John Cornwell. Some additional uhf signal measurements used were made by personnel at the Naval Communication Area Master Station (NAVCAMS), Guam, under the direction of RM-1 R.D. Smith.

UNCLASSIFIED (4) NOCE /TR-EL4
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REPORT DOCUMENTATION	PAGE READ INSTRUCTIONS BEFORE COMPLETING FORM	
1. REPORT NUMBER	2. GOVT ACCESSION NO. 3. RECIPIENT'S CATALOG NUMBER	
NOSC Technical Report 554 (TR 554)		
4. TITLE (and Subtitle)	TYPE OF REPORT & PERIOD COVE	RED
GEOMAGNETIC ACTIVITY AND THE EQUAT	TORIAL Final Report,	1
SCINTILLATION OF SATELLITE SIGNALS .	Marea 1978 — December 1979,	
	6. PERFORMING ONG. REPORT NUMBER	F R
7. AUTHOR(e)	5. CONTRACT OR GRANT NUMBER(s)	
. M.R. Paulson	16	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	S 10. PROGRAMMENT, T. PROJECT, T.	<u> </u>
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14. MONITORING AGENCY NAME & ADDRESS(If different		
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16. DISTRIBUTION STATEMENT (of this Report)		
Approved for public release; distribution unlimi-	ited.	
17. DISTRIBUTION STATEMENT (of the abstract entered	d in Block 20, it different from Report)	
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18. SUPPLEMENTARY NOTES		- 1
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19. KEY WORDS (Continue on reverse side if necessary at	nd identify by block number)	
Geomagnetism		ı
Equatorial scintillation		
Kp indices		
Satellites		
lonosphere scintillation		
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OBJECTIVE

Investigate the relationship between geomagnetic activity and the equatorial scintillation of satellite signals and, if some relationship is found, try to determine how the two are related.

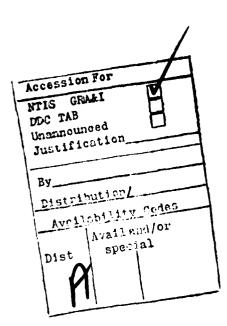
RESULTS

Correlations between scintillation activity and geomagnetic activity ranged from -0.91 to +0.56. When correlations between nightly scintillation activity and individual 3-hour Kp indices showed a maximum for a particular time of day, this maximum usually occurred around 1300-1600 LST for the negative maxima and 0200-0700 LST for the positive ones.

It is proposed that the ionized solar radiation, which causes geomagnetic activity, is affecting the occurrence and intensity of equatorial scintillation by heating the thermosphere and thus increasing or decreasing the zonal winds. The increase or decrease depends on the time, with respect to the equatorial site, that the radiations reach the earth.

RECOMMENDATIONS

The possible connection between ionized solar radiation and equatorial scintillation needs further investigation. In particular, the part that zonal and meridional winds may play in connecting the two, as well as connecting other phenomena that apparently contribute to the occurrence and intensity of scintillation, needs to be investigated.



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INTRODUCTION

During their investigations of the equatorial scintillation of satellite signals, several workers have looked for a possible connection between scintillation activity and geomagnetic activity.

Because of electric currents flowing above the earth's surface, the magnetic field at any point on the surface varies diurnally, seasonally, and with solar activity (ref 1). On days when the magnetic variations are smooth and regular, they proceed mainly according to local solar time; however, a small part of the variation is controlled by the moon. During a magnetic storm, additional currents circulate in the ionosphere and are strong in the high latitudes. These strong additional currents lead to fluctuations in the direction and intensity of the magnetic field as measured at the earth's surface. The currents are believed to be one of many effects caused by the impact of a solar stream, or cloud, of ionized gas on the earth's magnetic field.

The degree of magnetic disturbance during each Greenwich day is indicated by a variety of indices. One of the indices is Kp. Called the planetary 3-hour index, Kp ranges in value from 0 to 9 in steps of 1/3 to provide 28 intervals. Kp values are determined for each 3-hour interval during the day.

Additional information on geomagnetic activity and indices is available in reference 1.

Since March 1978, personnel at the Naval Communications Area Master Station, Guam, have been recording the amplitude of uhf signals from two MARISAT/GAPFILLER satellites, one positioned over the Indian Ocean, F2, and one over the Pacific Ocean, F3. F2 has an elevation angle from Guam of about 10 degrees and F3 about 50 degrees. In addition, personnel at the NASA Tracking Station in Dandan, Guam, recorded both uhf and L-band signals from these two satellites for the period from late February through December 1979. An extensive analysis of these data was reported in reference 2. This report will be limited to an investigation of the relationship between equatorial scintillation observed in the above data and geomagnetic activity.

OBJECTIVE

The objective of this work is to look for a relationship between geomagnetic activity and equatorial scintillation activity, using the data recorded at Guam; and, if some relationship is found, to try to determine how the two are related.

BACKGROUND

Koster (ref 3) says that the usual way of comparing scintillation activity and geomagnetic activity is to calculate the correlation between daily sums of the 3-hour Kp and the scintillation indices. The results, he says, are far from clear or consistent. A zero or low correlation can mean that there is no relationship between the variables, or that the relationship is nonlinear. He says that the latter is true in this case.

^{1.} National Bureau of Standards Monograph 80, Ionospheric Radio Propagation, by K. Davies, U.S. Government Printing Office, 1965.

^{2.} Naval Ocean Systems Center TR 543, Equatorial Scintillation of Satellite Signals at UHF and L-Band for Two Different Elevation Angles, by M.R. Paulson, in progress.

^{3.} Koster, J.P., Equatorial Scintillation, Planetary Space Science, v 20, pp 1999 - 2014, 1972.

Koster studied scintillation activity for various levels of magnetic activity. The study was limited to two daily intervals, 0000 - 0430 and 1930 - 2400 local time. The daily sum of Kp was taken as a measure of magnetic activity, and days were grouped according to whether this sum fell in the range 0 - 3, 3 - 6, etc. Six normalized monthly means of scintillation index were plotted for each range. He found the results for premidnight and for postmidnight virtually identical. On days when the sum of Kp was less than 30, there was no obvious dependence of scintillation on Kp. On days when this sum was equal to or greater than 30, the scintillation intensity was usually, but not always, reduced. This was true for both preand postmidnight periods.

Koster concludes that the relationship between scintillation intensity and magnetic activity at Legon, Ghana, is extremely nonlinear, so that calculation of a correlation coefficient between the two is not very useful. Furthermore, nighttime scintillation is frequently absent at Legon during times of severe magnetic disturbances.

Bandyopadhyay and Aarons (ref 4) investigated scintillation by means of data recorded at Huancayo, Peru, between July 1967 and February 1969. The signals used were transmitted from two geosynchronous satellites at 137 MHz. When they plotted the mean hourly scintillation index for the period from 1900 to 0700 against the sum of the 3-hour K_p indices at Huancayo for the same night, they found no trends. When they used hourly means of scintillation indices between 1800 and 0600 LST to determine the occurrence of scintillation intensity greater than 40% during various levels of magnetic activity, they concluded that there was no significant dependence. In particular, they said that during this period of high sunspot number the scintillations were not negatively correlated with K_p .

Mullen (ref 5) made use of 136-MHz satellite data also recorded at Huancayo, Peru, to investigate the seasonal and magnetic dependence of equatorial scintillation. Over 13,000 hours of amplitude data recorded from January 1968 through the end of 1970 were used. Hourly scintillation indices were calculated for the data; then those which had indices greater than 20% were sorted into pre- and postmidnight periods for four seasonal groups.

Mullen used an hourly Dst magnetic index to study magnetic activity dependence. A Dst less than or equal to -20 was considered an indication of disturbed magnetic conditions. The scintillation data were then sorted into periods for disturbed and undisturbed magnetic activity for each of the pre- and postmidnight periods for each of the seasons. He says that the most obvious effect is the increase in scintillation occurrence during the June solstice during magnetically disturbed periods.

For the premidnight hours during the December solstice, the occurrence of scintillation was higher during quiet periods than during disturbed periods. For the March equinox, Mullen found scintillation much more common during quiet magnetic periods than during disturbed periods. Premidnight scintillation during the September equinox was similar for the quiet and the disturbed periods but, for postmidnight periods, it was significantly higher during disturbed periods.

In view of the varied and complex results uncovered by the above workers, it appeared that an investigation into the relationship between geomagnetic activity and the equatorial scintillation data recorded at Guam should be undertaken. Not only is Guam geographically remote from the African and South American locations where the other studies

^{4.} Bandyopadhyay, P., and J. Aarons, The Equatorial F-Layer Irregularity Extent as Observed from Huancayo, Peru, Radio Science, v 5, no 6, pp 931 - 938, June 1970.

^{5.} Mullen, J.P., Sensitivity of Equatorial Scintillation to Magnetic Activity, Journal of Atmospheric and Terrestrial Physics, v 35, pp 1187 - 1194, 1973.

were made, but the 257-MHz vhf/uhf and the 1541-MHz L-band frequencies monitored at Guam are considerably higher than the 136-MHz frequency used in the preceding studies.

DATA ANALYSIS AND RESULTS

Although Koster found the relationship between magnetic activity and scintillation activity to be highly nonlinear, it appeared that the simplest approach, initially, would be to look for a correlation between magnetic activity and the Guam scintillation activity.

Daily total hours of the occurrence of scintillation with fades greater than 6 dB were determined from the uhf records of both the Indian Ocean satellite and the Pacific Ocean satellite, based on the data from 1 January through 31 December 1979. The daily sums of the eight 3-hour Kp indices, obtained from reference 6, were used as an indicator of magnetic activity. The data were taken in sample periods of about 30 days at 5-day intervals and the calculated correlation value was plotted for the center of the sample period. The results are shown in figure 1.

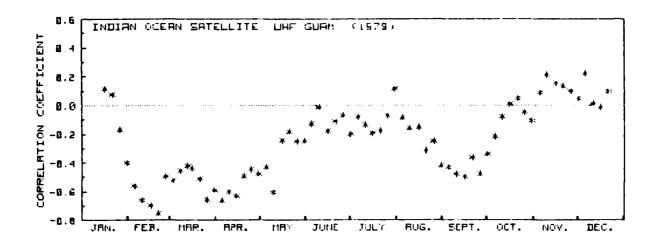
These correlation curves start out near zero or slightly positive in January and rapidly go negative in February, with values as large as -0.75 for the Indian Ocean satellite and -0.6 for the Pacific Ocean satellite. Values for F3 remain quite negative through the middle of June; then, after going slightly positive in July, they go negative again with values as low as -0.6 in September before going positive in November and December with values around 0.2 to 0.4. Correlation values for F2, the Indian Ocean satellite, start approaching zero in May but stay slightly negative except for one point in July. They again go negative in September before becoming slightly positive in November and December with values on the order of 0.1 to 0.2.

While the two curves are quite similar, there are some differences. These differences may result from the fact that the two satellites had different look angles, with the elevation angle to F2 being about 10 degrees and that for F3 being about 50 degrees. An additional possible reason for the differences is that F2, because of its low look angle, was also susceptible to the occurrence of sporadic-E irregularities.

On the chance that using 6-dB fades as a criterion for scintillation was not a sensitive enough indicator, data from 1 March through December 1979 were digitized and values for standard deviation divided by the mean were calculated for each 15-minute sample. These values were summed for each night for each satellite, and for the L-band as well as the uhf. Correlations between these data and magnetic activity were calculated in a manner identical to that already described. The results are shown in figure 2. The upper two curves are for the uhf for the two satellites and the bottom one is for the L-band for F2. The uhf plots show excellent agreement with corresponding plots in figure 1. Comparing the L-band plot for F2 with the uhf plot for F2 also shows good agreement.

The next step in trying to evaluate the relationship between magnetic activity and equatorial scintillation was to see if the scintillation was more sensitive to magnetic activity occurring during some particular time of day. Again, about 30-day samples were used, this time at 15-day intervals. Daily occurrence of scintillation data was correlated with daily values for each of the eight 3-hour Kp indices for each of the sample periods. To get a finer structure, additional correlations were calculated with interpolated values of Kp between the reported points. The results were plotted as correlation value versus the GMT or LST

^{6.} National Oceanic and Atmospheric Administration Environmental Data and Information Service, Solar-Geophysical Data, Prompt Reports, Boulder, CO.



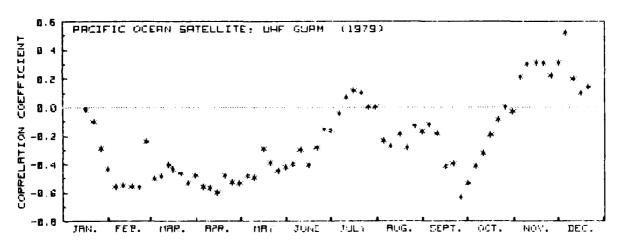
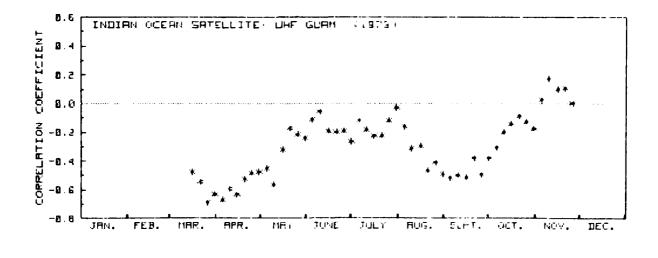
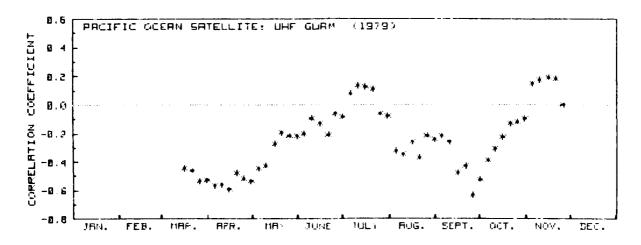


Figure 1. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the daily summed 3-hour Kp indices, using 30-day data samples.





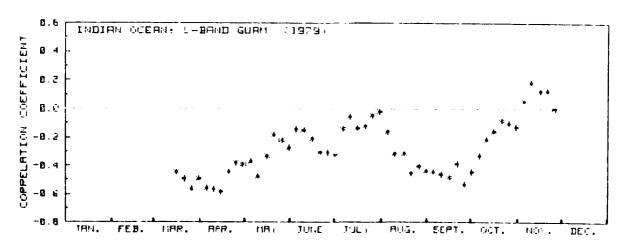


Figure 2. Cross correlations between nightly sums of standard deviation divided by the mean for 15-minute time intervals and the daily summed 3-hour Kp indices, using 30-day data samples.

when the magnetic activity occurred. These plots were made for each of the data samples and are shown in figures 3 through 7.

Figure 3 comprises the plots for F2 correlations calculated through the use of 6-dB fading data. The plots on the right side are for data overlapping the 2 months. For example, the plot to the right of January is for data from 15 January to 15 February. These plots show results quite similar to those obtained with the total daily Kp values. In some cases, however, they show a definite maximum negative or positive correlation for a particular time of day. This is especially noticeable for the months of August and September for F2, as shown in figure 3. In figure 4 for F3, it shows up in March and April and again in September. In November, there is a positive maximum for both F2 and F3 but it is most pronounced for F3.

Corresponding plots of correlations that were calculated between standard deviation divided by the mean and daily magnetic activity are shown in figures 5 and 6 for the uhf and in figure 7 for the L-band for F2. The results are quite similar to those in figures 3 and 4.

Maximum negative correlations, when they occurred, were around 1300 to 1600 LST, and maximum positive correlations occurred around 0200 to 0700 LST.

Other workers have been looking for differences in magnetic dependence for pre- and postmidnight scintillation activity. To see if any differences might show up in the Guam data, sums of standard deviation divided by the mean were calculated for premidnight and postmidnight for the uhf on the Pacific Ocean satellite, F3. Cross correlations were calculated as before. These are shown in figure 8 for the premidnight data and in figure 9 for the postmidnight data. Corresponding correlations are quite similar, and are also similar to those calculated for the total night. The biggest differences in the pre- and postmidnight correlations appear to occur in the June and July data.

Since there is probably nothing inherently significant about midnight, a 0200 LST dividing time was used to determine what effect it might have. Daily total hours of scintillation with fades greater than 6 dB were determined for time prior to 0200 LST and for time from 0200 LST on. These were then correlated with magnetic activity as before, and are shown in figures 10 and 11.

The correlation plots for the occurrence of scintillation prior to 0200 LST are quite similar to those for the all-night case shown in figure 4. Again, when there is a definite maximum negative correlation, it occurs around 1300 to 1600 LST.

The cross correlation for the after-0200 scintillation show many differences. July and August show positive correlations, as do October through December. August and September show negative correlation for one part of the day and positive correlation for another.

To determine what effect varying the sample size might have on the correlations, the total hours per day that fades exceeded 6 dB were used for the Pacific Ocean satellite uhf in about 15-day samples, and the correlations calculated. The results are plotted in figure 12 and tabulated in table X in appendix A. Maximum negative values are seen for the last 2 weeks of March and the first-2 weeks of April for the time period around 1300 to 1600 LST. The values were -0.79 and -0.70, respectively. Even larger negative correlations are seen for the last 2 weeks in April, but there is no sharp peak in the curve. Another negative peak is seen around 1300 LST for the last 2 weeks in September. This had a value of -0.91. Positive correlations are seen in July and November, with a value of 0.51 during the first 2 weeks of November occurring around 0400 LST.

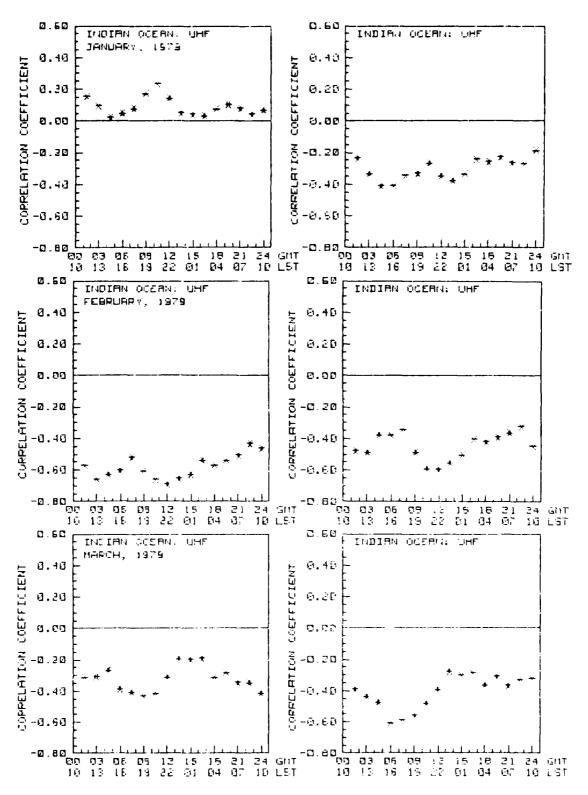


Figure 3. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F2.

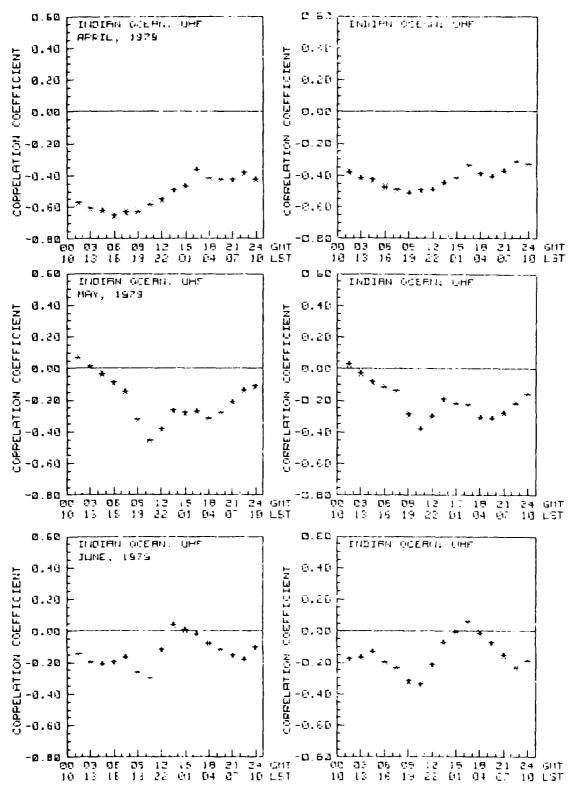


Figure 3. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F2. (Continued)

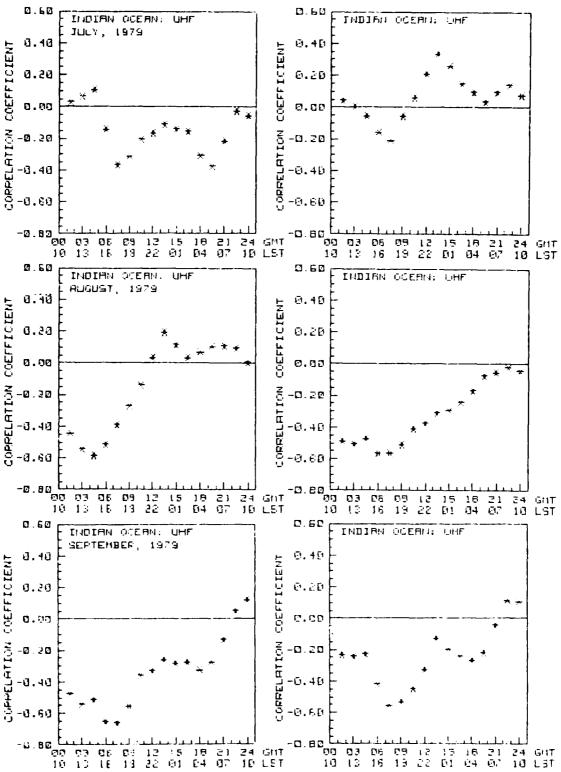


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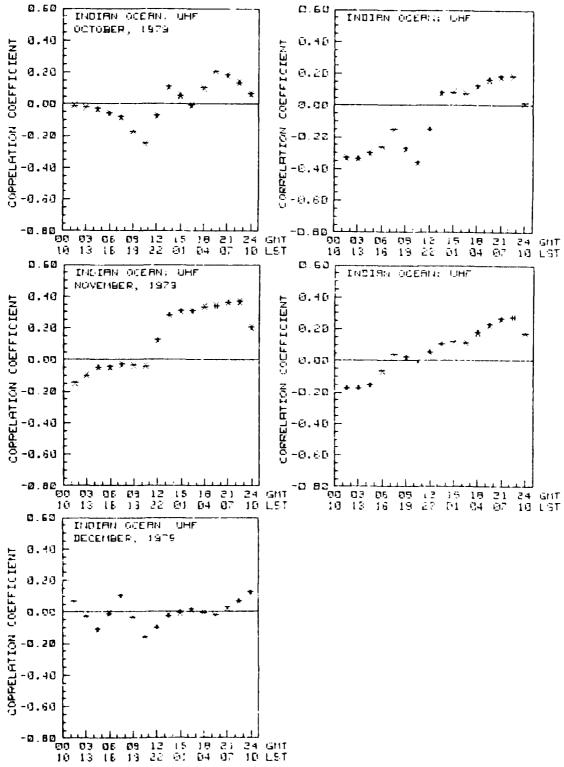


Figure 3. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F2. (Continued)

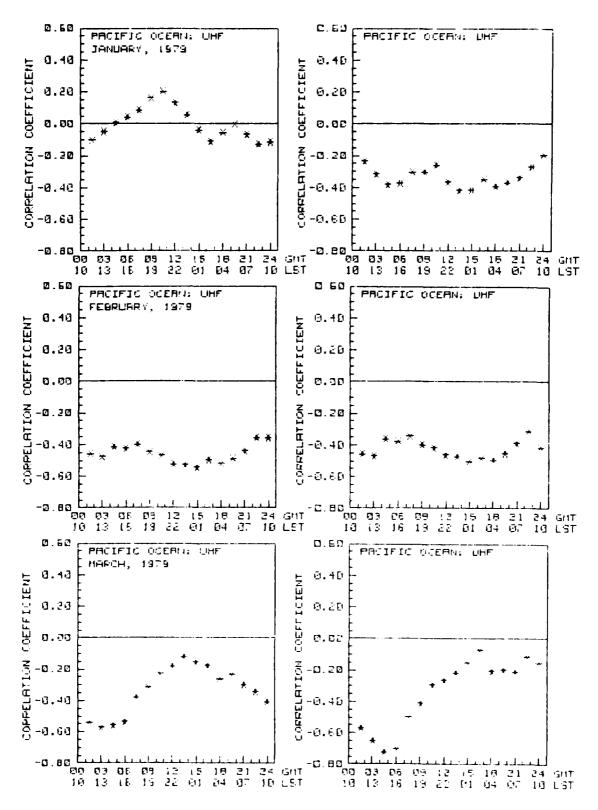


Figure 4. The same as figure 3, but for F3, the Pacific Ocean satellite.

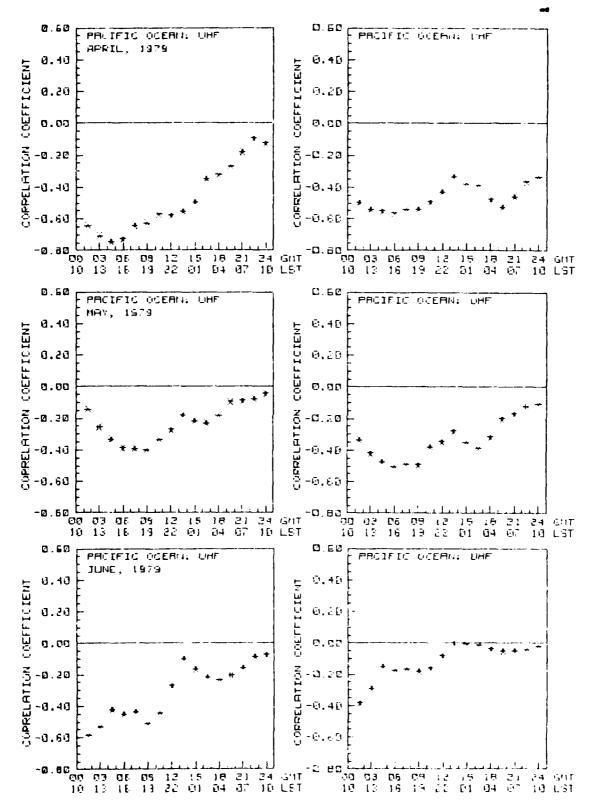


Figure 4. The same as figure 3, but for F3, the Pacific Ocean satellite. (Continued)

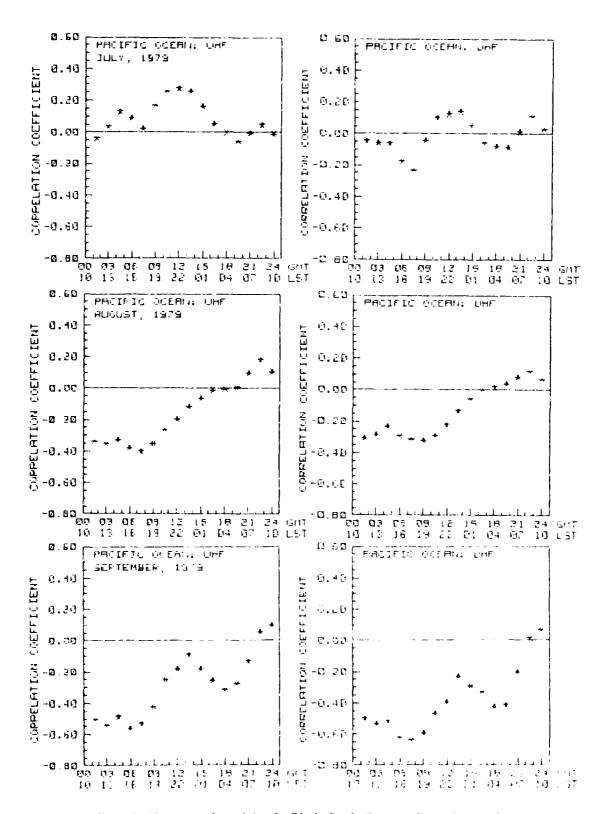


Figure 4. The same as figure 3, but for F3, the Pacific Ocean satellite. (Continued)

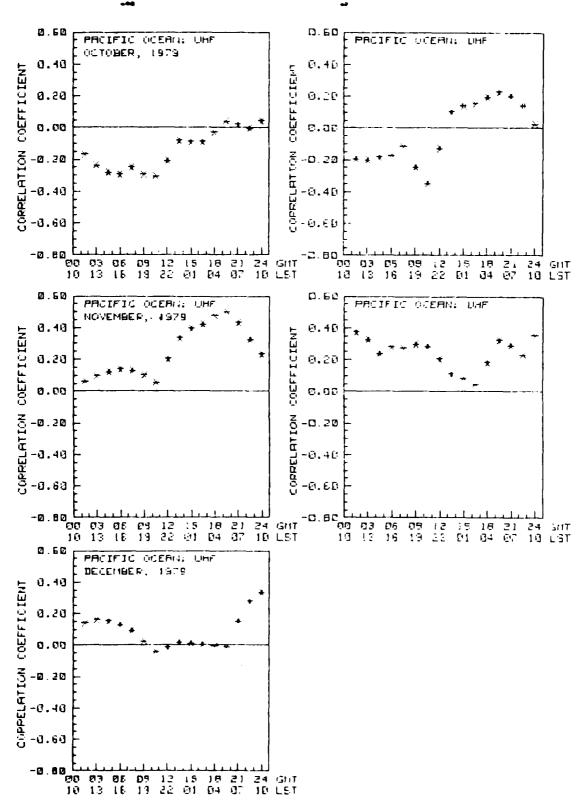


Figure 4. The same as figure 3, but for F3, the Pacific Ocean satellite. (Continued)

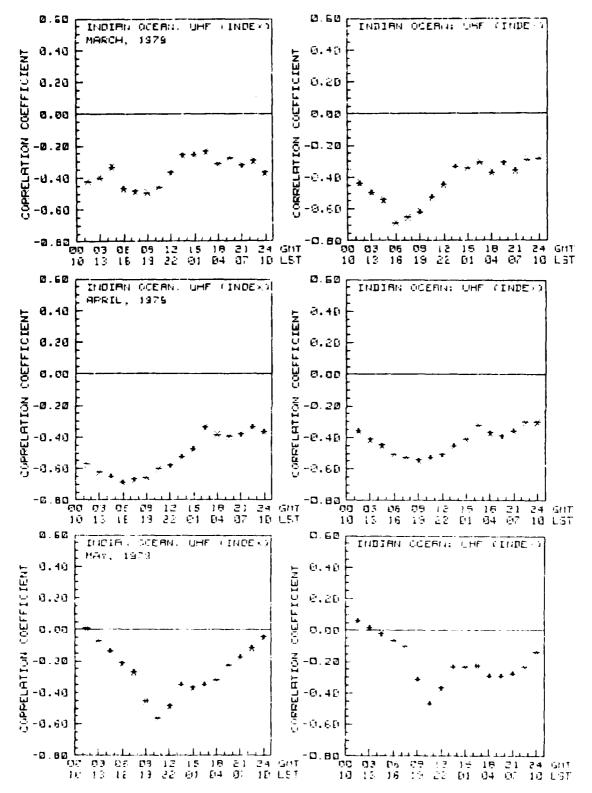


Figure 5. Cross correlations between nightly sums of standard deviation divided by the mean and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F2.

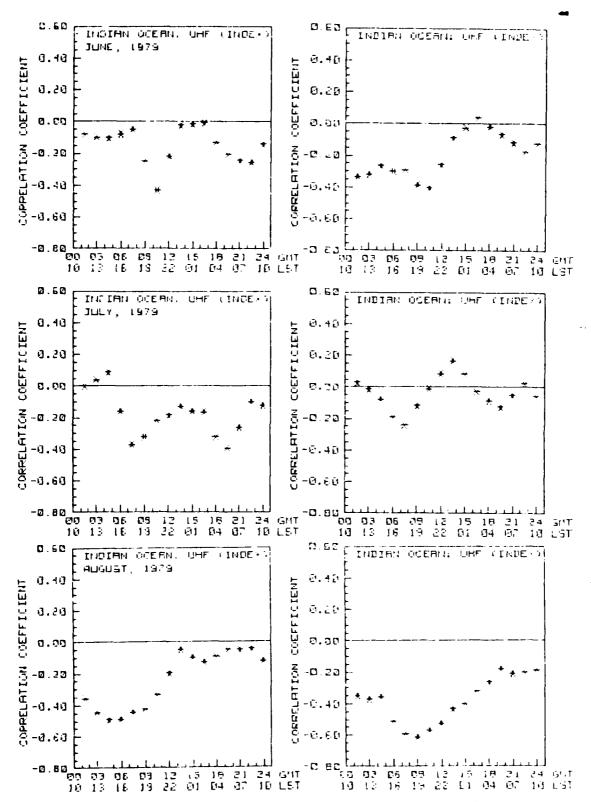
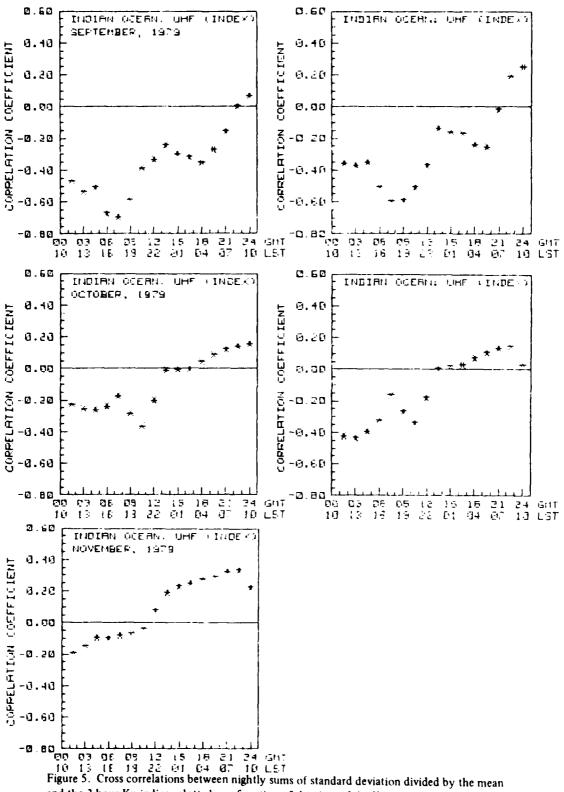


Figure 5. Cross correlations between nightly sums of standard deviation divided by the mean and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F2. (Continued)



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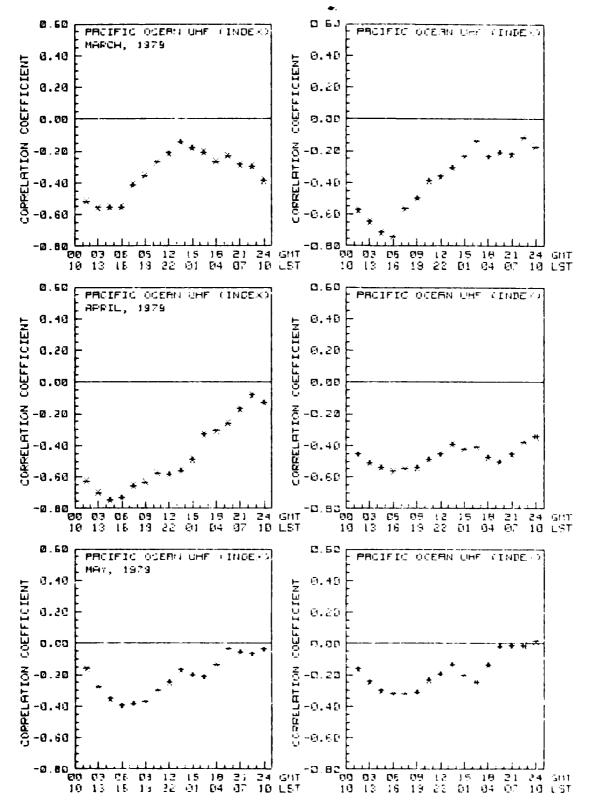


Figure 6. The same as figure 5, but for F3.

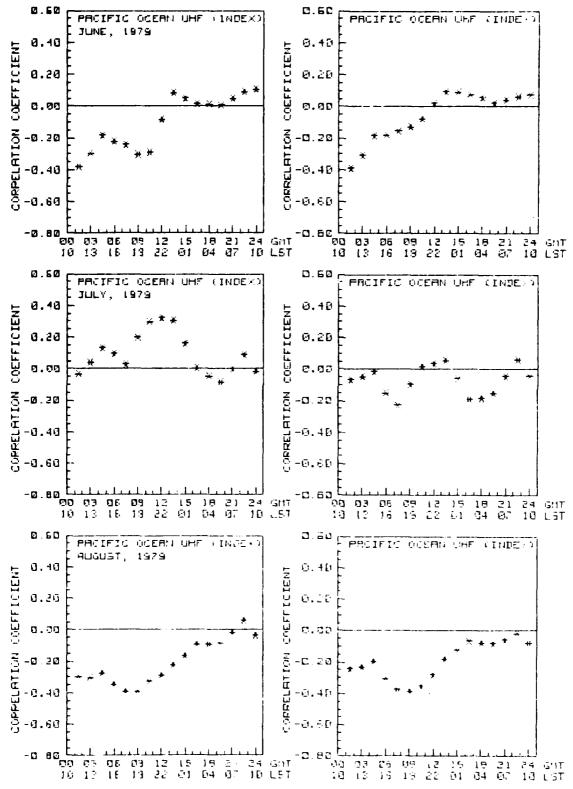


Figure 6. The same as figure 5, but for F3. (Continued)

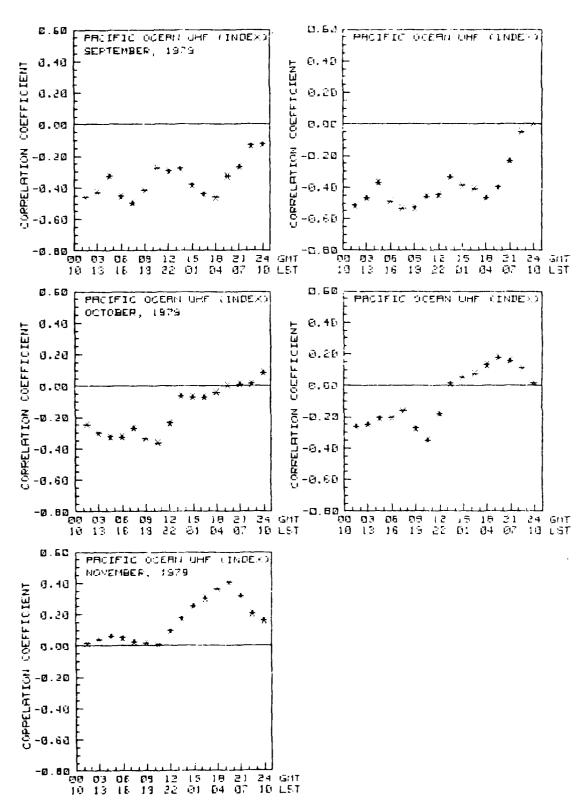


Figure 6. The same as figure 5, but for F3. (Continued)

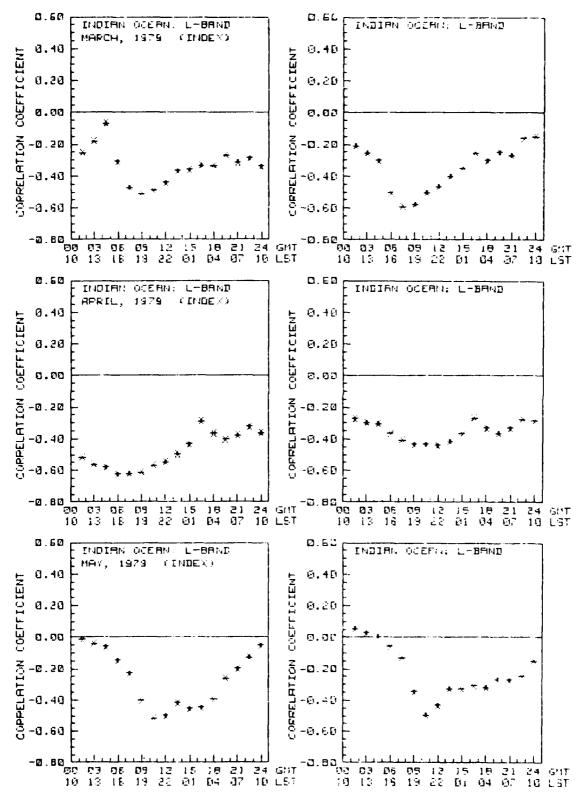


Figure 7. The same as figure 5, but for the L-band signals on F2.

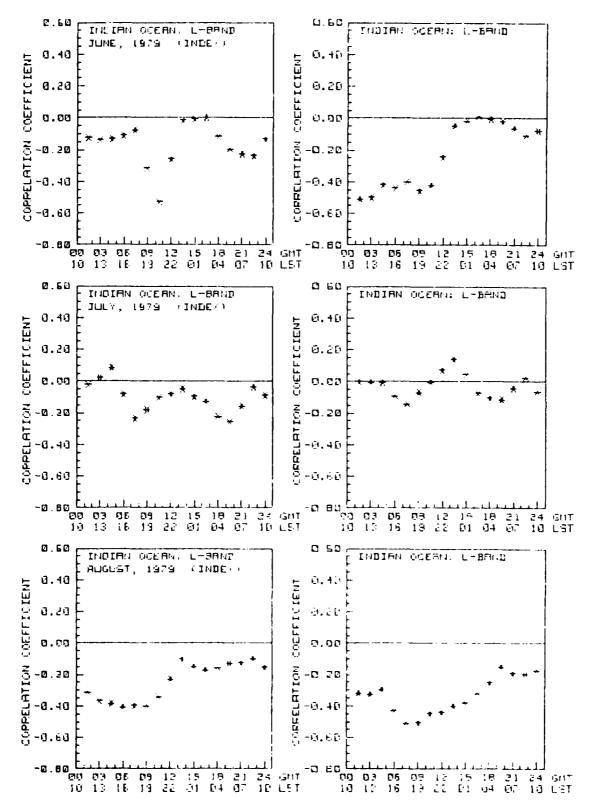


Figure 7. The same as figure 5, but for the L-band signals on F2. (Continued)

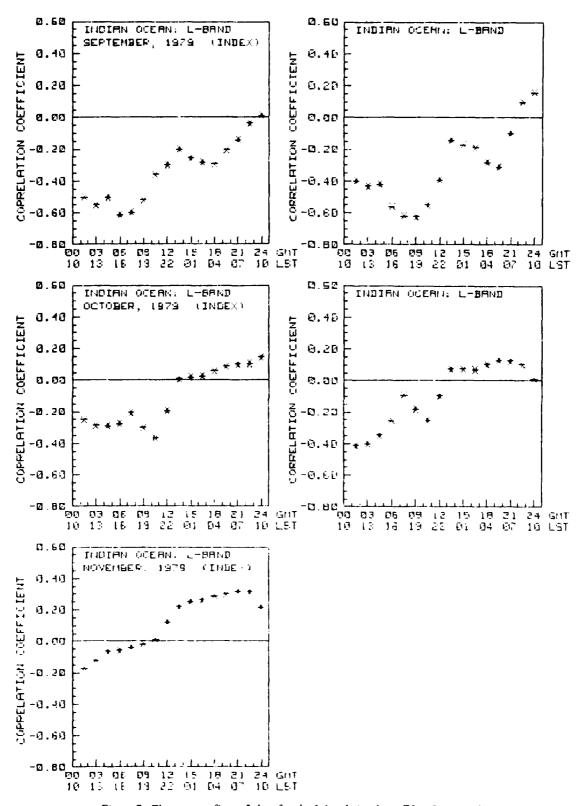


Figure 7. The same as figure 5, but for the L-band signals on F2. (Continued)

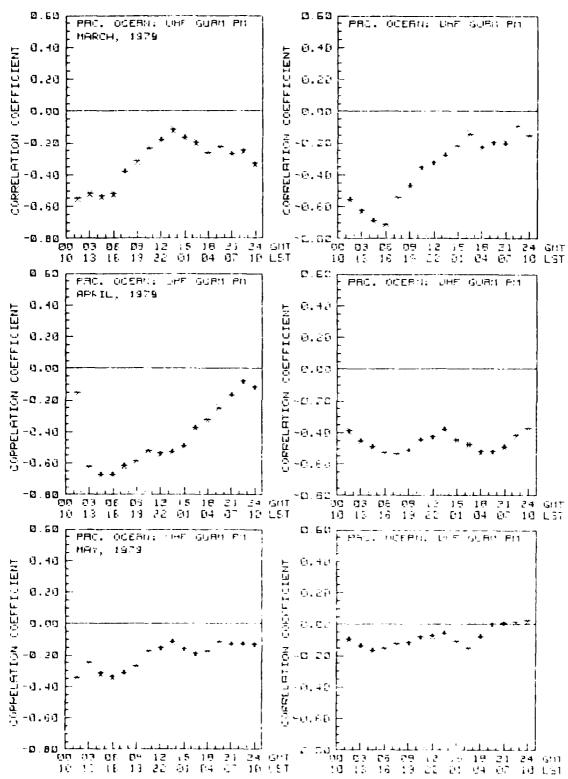
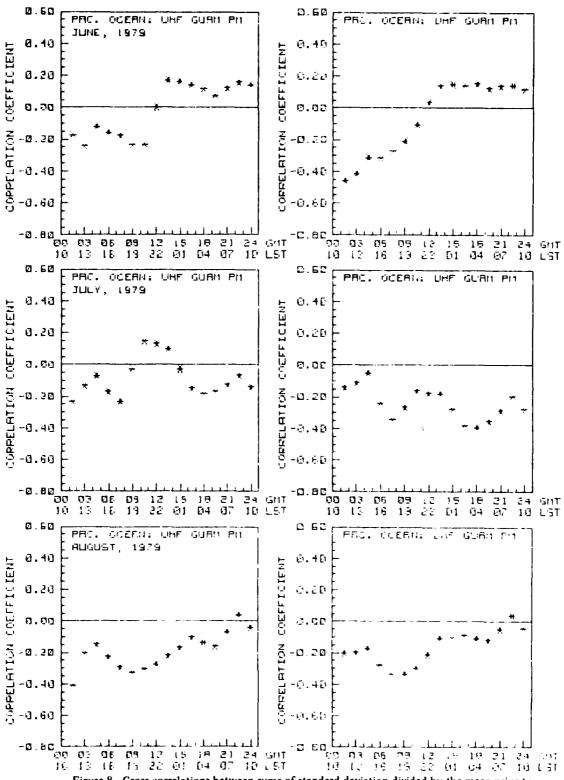


Figure 8. Cross correlations between sums of standard deviation divided by the mean prior to local midnight and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3.



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Figure 8. Cross correlations between sums of standard deviation divided by the mean prior to local midnight and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3. (Continued)

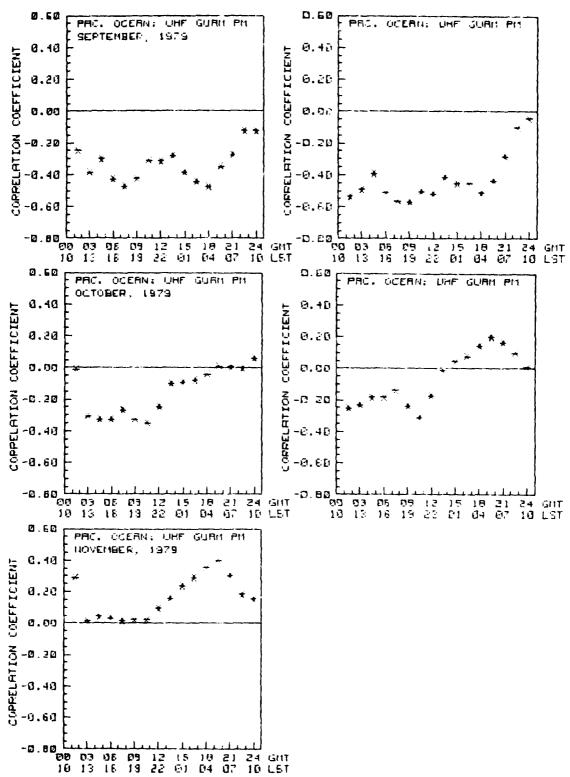


Figure 8. Cross correlations between sums of standard deviation divided by the mean prior to local midnight and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3. (Continued)

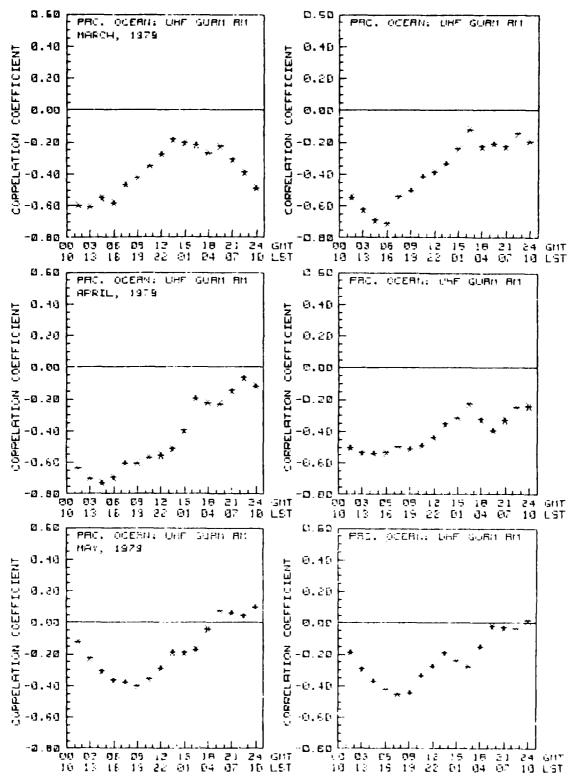


Figure 9. The same as figure 8, but using sums of standard deviation divided by the mean between local midnight and 0300.

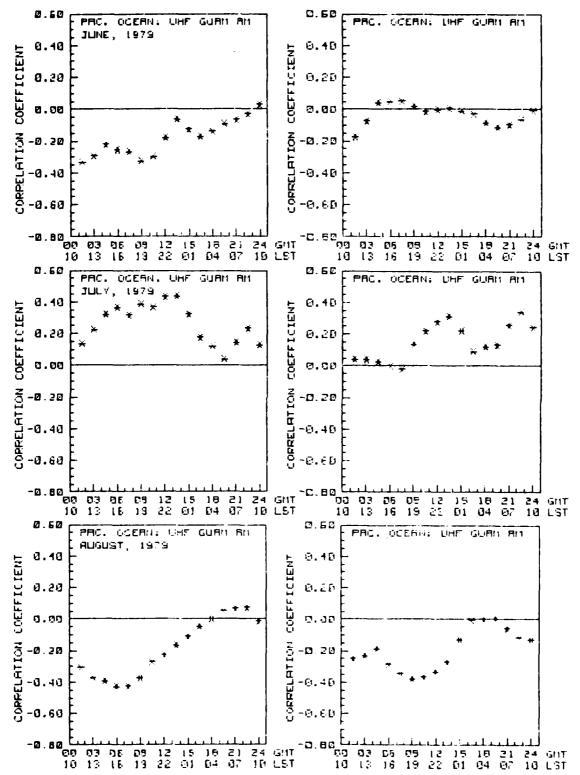


Figure 9. The same as figure 8, but using sums of standard deviation divided by the mean between local midnight and 0300. (Continued)

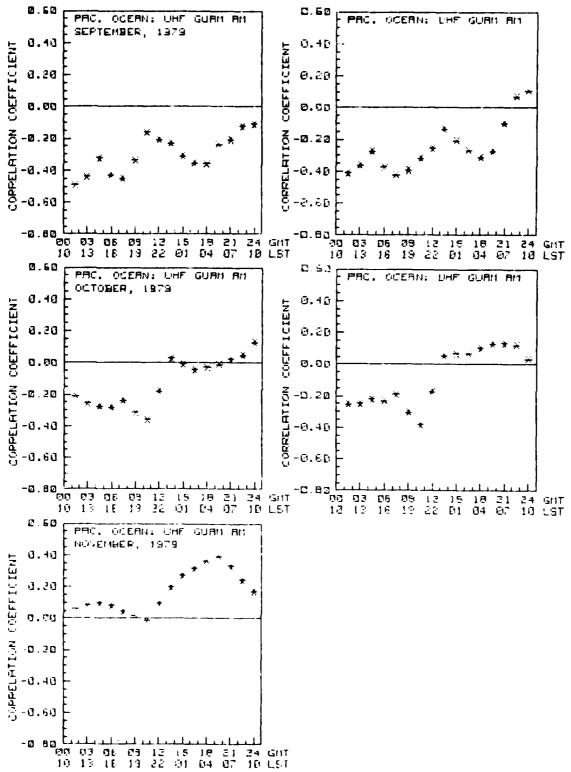


Figure 9. The same as figure 8, but using sums of standard deviation divided by the mean between local midnight and 0300. (Continued)

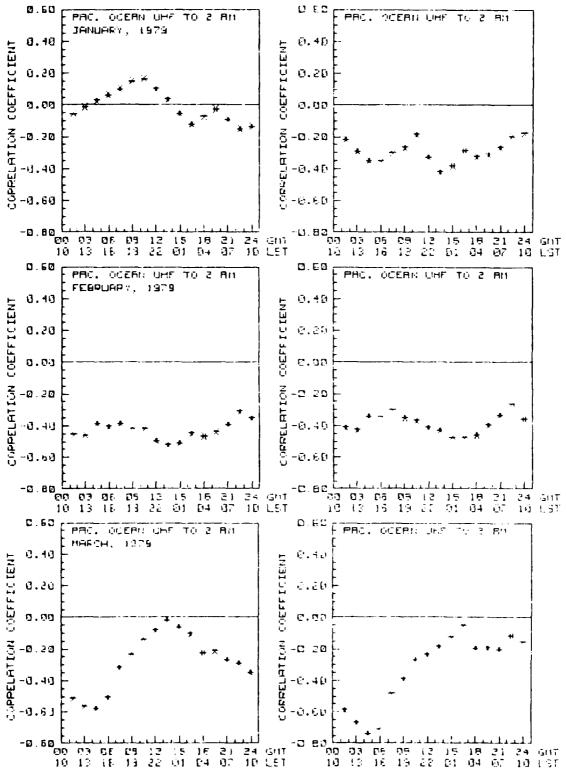


Figure 10. Cross correlations between total hours per night prior to 0200 local time that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3.

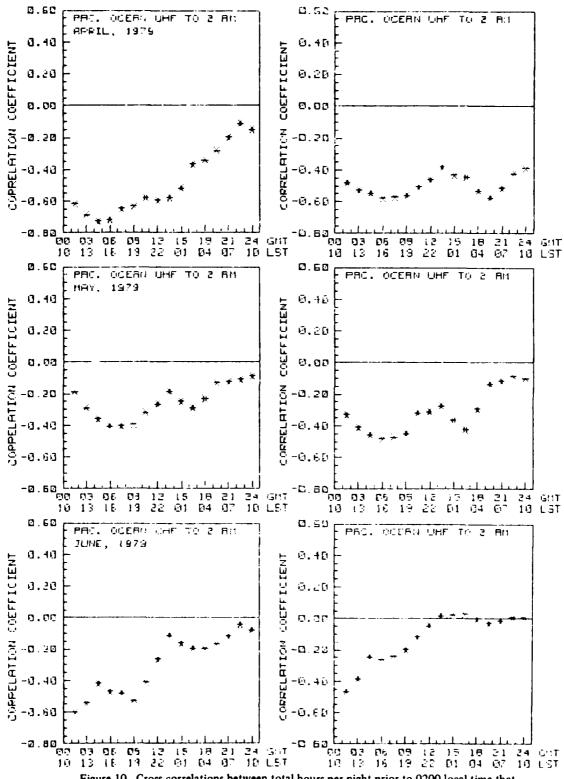


Figure 10. Cross correlations between total hours per night prior to 0200 local time that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3. (Continued)

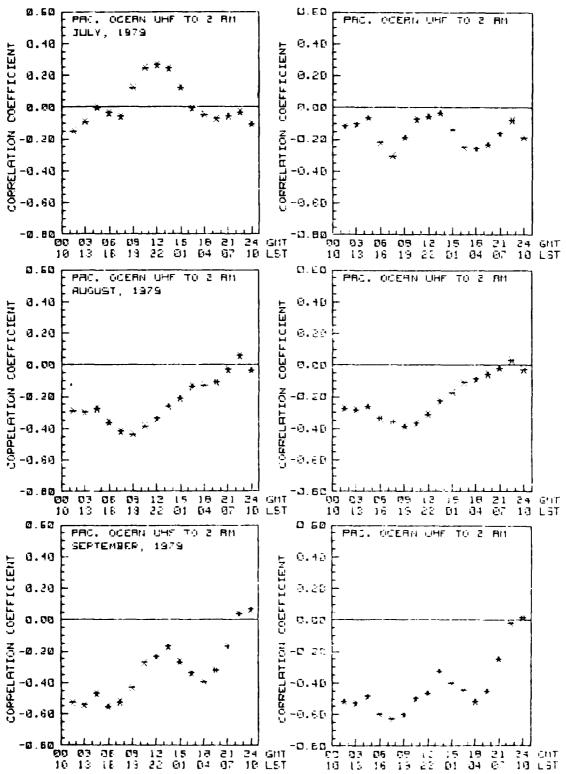


Figure 10. Cross correlations between total hours per night prior to 0200 local time that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3. (Continued)

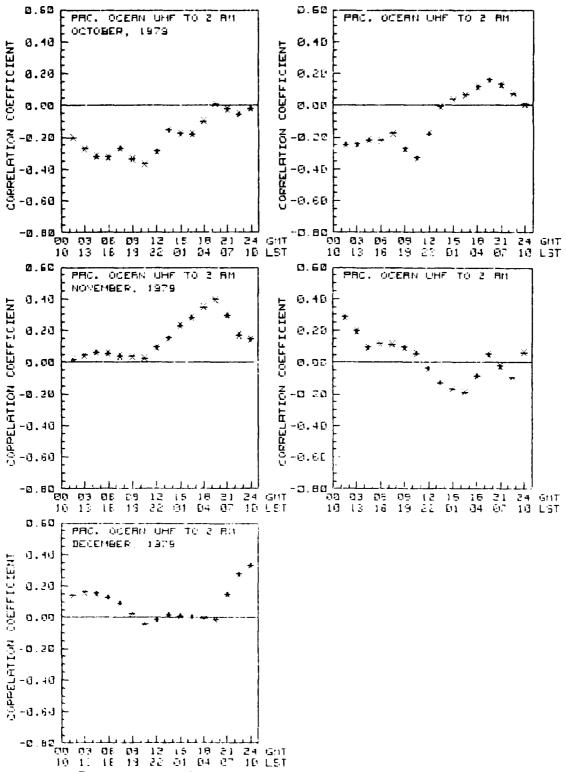


Figure 10. Cross correlations between total hours per night prior to 0200 local time that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 30-day data samples for F3. (Continued)

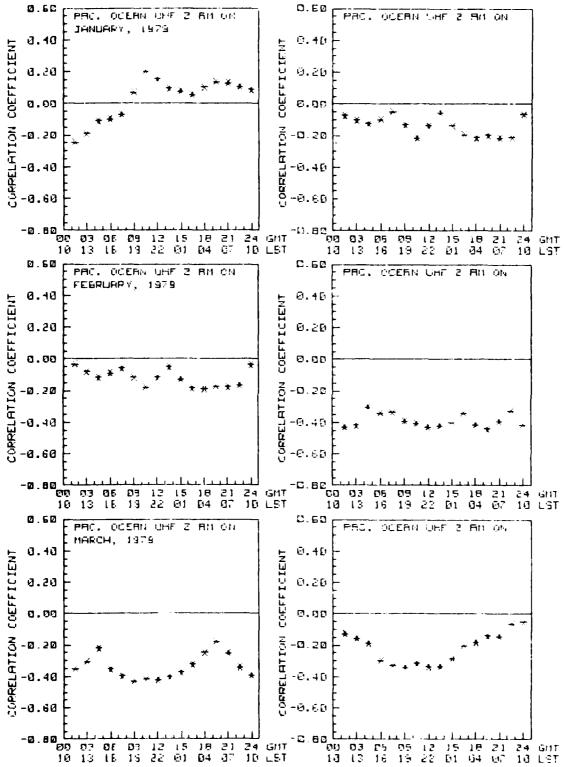


Figure 11. The same as figure 10, but using total hours per night after 0200 local time that scintillation fading exceeded 6 dB.

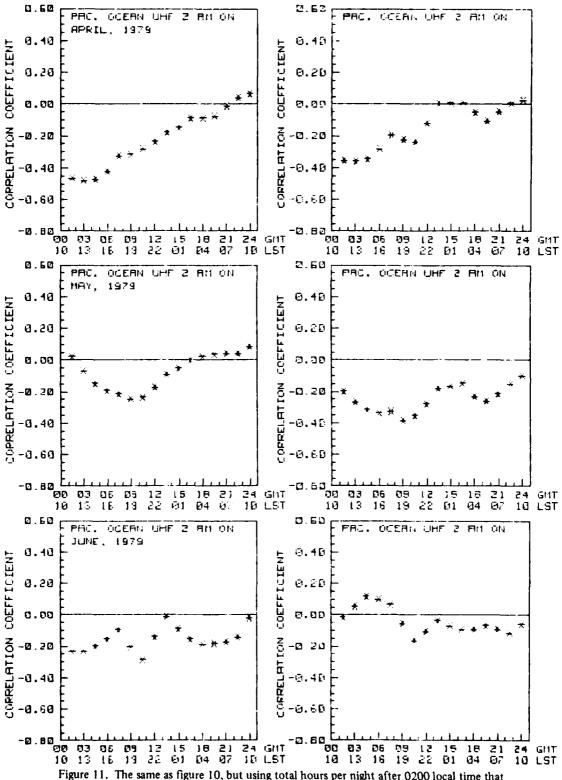


Figure 11. The same as figure 10, but using total hours per night after 0200 local time that scintillation fading exceeded 6 dB. (Continued)

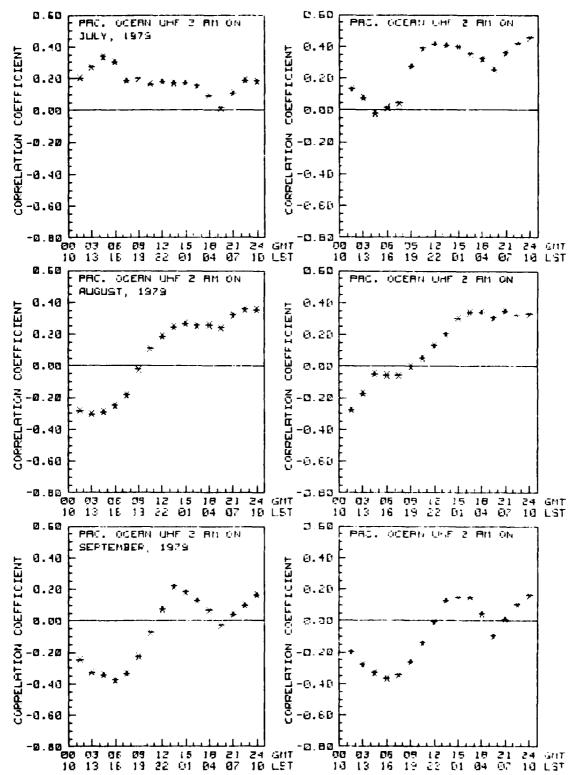


Figure 11. The same as figure 10, but using total hours per night after 0200 local time that scintillation fading exceeded 6 dB. (Continued)

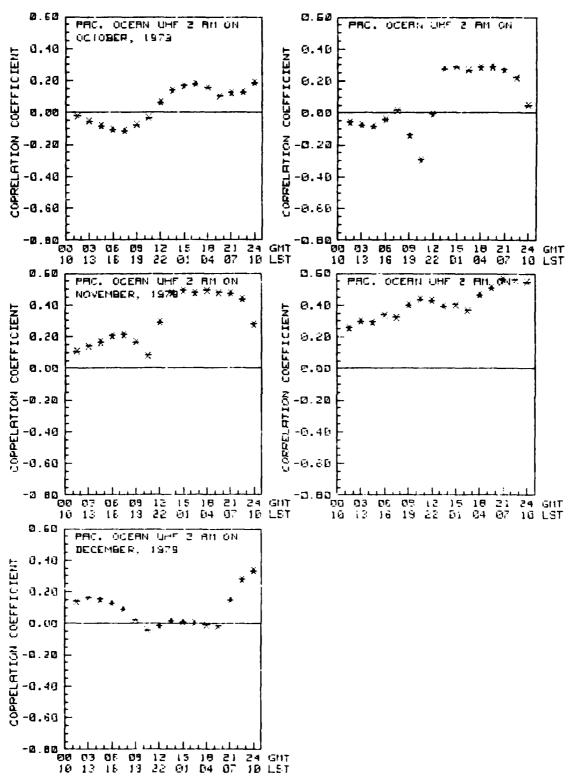


Figure 11. The same as figure 10, but using total hours per night after 0200 local time that scintillation fading exceeded 6 dB. (Continued)

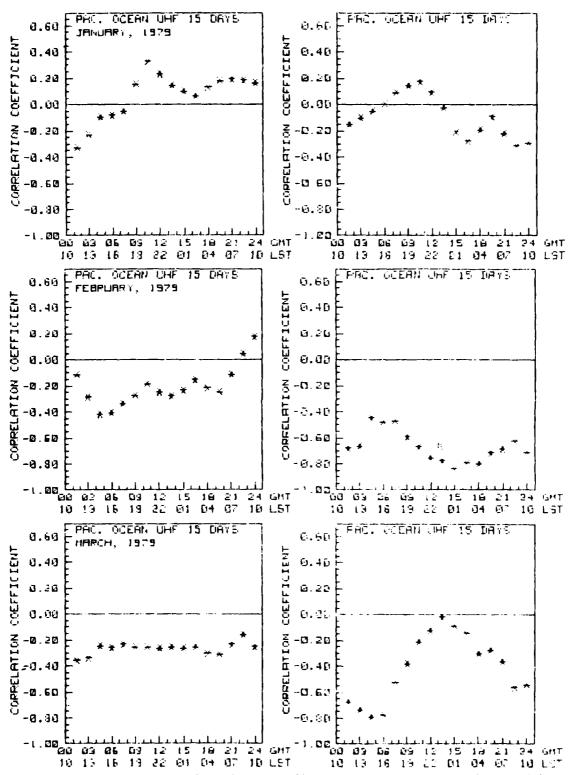
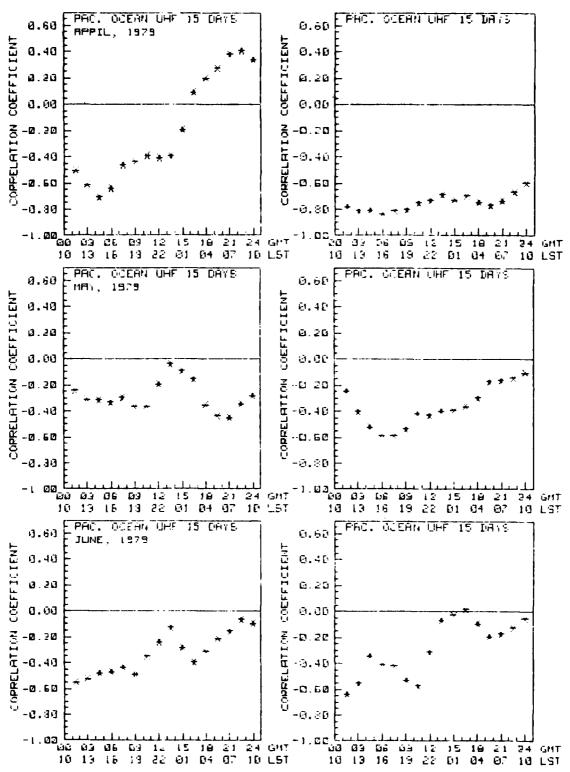


Figure 12. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 15-day data samples for F3.



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Figure 12. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 15-day data samples for F3. (Continued)

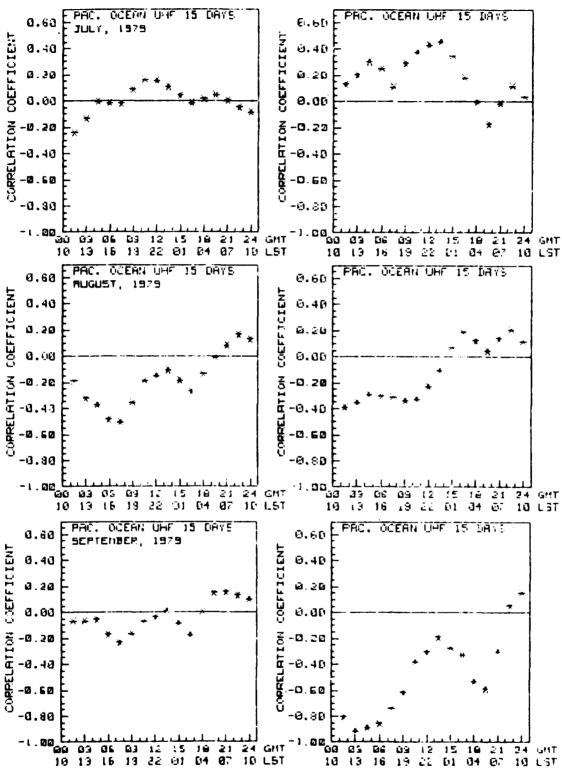


Figure 12. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 15-day data samples for F3. (Continued)

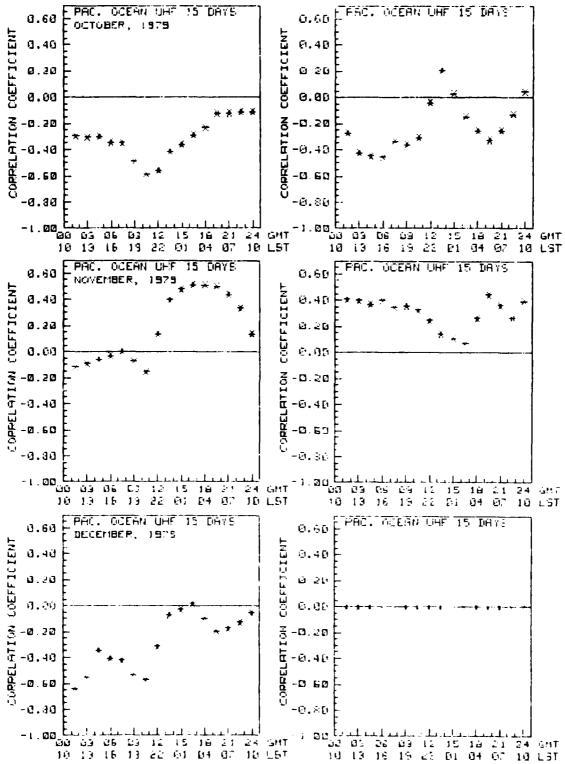


Figure 12. Cross correlations between total hours per night that scintillation fading exceeded 6 dB and the 3-hour Kp indices plotted as a function of the time of the Kp measurement, using 15-day data samples for F3. (Continued)

DISCUSSION

When good correlation, either positive or negative, is obtained between two variables, a cause-and-effect relationship may sometimes be assigned to them. It is not always true, however, that one of them is affecting the other. Sometimes a third factor is affecting them both. It is proposed here that it is not magnetic activity which is affecting the occurrence and intensity of equatorial scintillation but, rather, the solar radiations that are producing the magnetic disturbances which also affect the scintillation. It is further proposed that this can be either a positive effect or a negative effect, depending on when, with respect to the equatorial site, the radiation reaches the earth.

In an earlier report (ref 7), this writer proposed that zonal winds resulting from day-to-night temperature and pressure differences were the generating mechanism which produced the ionospheric irregularities which cause equatorial scintillation. More recently (ref 2), a periodicity was observed in the scintillation data which was attributed to the moon's gravitational attraction increasing or decreasing the zonal winds, depending on the moon's location with respect to the sun.

If zonal winds are indeed the mechanism generating the ionospheric irregularities which cause equatorial scintillation, then a connection between magnetic activity (or, rather, the ionized solar radiations which cause magnetic activity) and the occurrence of scintillation can be made.

Using satellite drag measurements, Jacchia et al (ref 8) found that the temperature and density of the upper atmosphere increased during magnetic storms. Even the smallest variations in geomagnetic activity were reflected in atmospheric variations. They found the temperature changes to be nearly linear with the 3-hour Kp magnetic index for values of Kp less than 5. The variation was about 28 degrees/Kp. For larger Kp, they found the temperature to vary more linearly with the 3-hour Ap index (ref 1) at a rate of about 1 degree/Ap. Temperature changes for latitudes around 25 degrees lagged the magnetic disturbances, with an average time delay of 7.2 ± 0.3 hours.

Perigee heights of the satellites used in the study ranged from 250 to 545 kilometers.

Ionized solar gas, arriving from the sun, propagates down the magnetic field lines to the auroral region, setting up currents which disturb the magnetic field (ref 1). The associated energy raises the temperature and pressure of the thermosphere in the auroral regions. Jones and Rishbeth (ref 9) say that the normal meridional winds at thermospheric heights blow toward the equator on the night side of the earth and toward the poles on the day side. They say that the increased pressure in the polar regions, which arises from the thermospheric heating, increases the equatorward winds at night and decreases the day-time poleward winds.

It is argued here that the heating in the auroral regions by the ionized solar gas can increase or decrease the occurrence and intensity of scintillation at a given equatorial site, depending on when, with respect to the equatorial site, the radiations reach the auroral regions. If they arrive at such time that the energy transmitted by meridional winds raises

^{7.} NOSC TR 290, Zonal Winds as a Generating Mechanism for the Ionospheric Irregularities that Cause Equatorial Scintillation of Satellite Signals, by M.R. Paulson, 26 June 1978.

^{8.} Jacchia, L.G., J. Slowey, and F. Verniani, Geomagnetic Perturbations and Upper Atmosphere Heating, Journal of Geophysical Research, v 72, no 5, pp 1423 - 1434, March 1967.

^{9.} Jones, K.L., and H. Rishbeth, The Origin of Storm Increases of Mid-Latitude F-Layer Electron Concentration, Journal of Atmospheric and Terrestrial Physics, v 33, pp 391 - 401, 1971.

the nightime temperature and density of the thermosphere at the equatorial site, the resulting decrease in day-to-night pressure differences will reduce or inhibit the zonal winds and consequently the occurrence and intensity of equatorial scintillation. If they arrive at such time as to increase the daytime temperature and density of the thermosphere, by reducing the poleward meridional winds, the increased day-to-night pressure difference would tend to increase the zonal winds and the occurrence and intensity of the equatorial scintillation.

The positive effects of the solar radiations would be most apparent during times when scintillation occurrence and intensity are quite low. Radiation arriving at times which would normally reduce scintillation would have the same effect, but there would be no scintillation to reduce. On the other hand, radiation arriving at a time so as to increase scintillation could increase the day-to-night pressure differences and produce zonal winds of sufficient velocity, at times, to produce scintillation. During periods of high scintillation activity, the inhibiting nature of the solar radiations would be more apparent since positive contributions would be obscured by the already extensive scintillation activity. During times of moderate scintillation, correlations could be quite low since the effects of radiations arriving at different times of day tend to oppose each other.

RESULTS

Cross correlations between total daily hours of scintillation with fades greater than 6 dB and the daily summed geomagnetic Kp indices calculated through the use of 30-day data samples, showed correlations near zero in January which then went rapidly negative in February. Correlations for the Pacific Ocean satellite, F3, stayed negative through most of June, then approached zero for a while before going negative again in September. Correlations for the Indian Ocean satellite, F2, approached zero around mid-May through mid-August before going negative again in September. The correlations were somewhat positive in November and December for both satellites.

Calculations of correlations between the individual 3-hour Kp indices and the total nightly occurrence of scintillation gave plots of correlation versus time of magnetic activity that showed negative peaks at times, particularly in March and April and again in September. These peaks occurred around 1300 – 1600 LST. In November, a positive maximum occurred around 0200 – 0700 LST.

When only the occurrence of scintillation from 0200 LST and later was used, the cross-correlation plots showed positive correlations for July and August and for October through December. Some of the curves showed positive and negative correlations with magnetic activity for different times of the day.

It is proposed here that it is the ionized solar radiations, which cause the magnetic disturbances, that also affect the occurrence and intensity of equatorial scintillation, and not the magnetic disturbances themselves. It is further proposed that the solar radiations heat the thermosphere in the auroral regions, and that this energy can then increase the temperature and density of the thermosphere in the equatorial regions, either by increasing the equatorward flow of the meridional winds at night or by reducing the poleward flow of the winds in the daytime. It is argued that this temperature and density increase can either increase or decrease the occurrence and intensity of equatorial scintillation, depending on when the temperature and density increase occurs. If it occurs at night, it will tend to reduce or inhibit the scintillation by decreasing the day-to-night temperature and pressure differences, and thus decrease the zonal winds. If it occurs in the daytime, it will tend to increase these differences and thus increase the zonal winds. These variations in zonal wind would show up as variations in the occurrence and intensity of the equatorial scintillation.

RECOMMENDATIONS

The possible connection between magnetic activity, or ionized solar radiation, and equatorial scintillation needs further investigation. In particular, the part that zonal and meridional winds may play in connecting the two, as well as the part they play in connecting other solar and geophysical phenomena to the occurrence and intensity of scintillation, needs to be investigated.

It is recommended that spaced receivers be used to monitor signals from a satellite for approximately 1 year. The apparent ionospheric drift velocity calculated from the spaced receivers could be used as an indication of the zonal winds. The occurrence and intensity of scintillation, magnetic activity, phases of the moon, and solar activity could be related to this drift velocity, as well as to each other.

Obtaining a continuous measure of meridional winds would probably be quite difficult. For one thing, such measurements should probably be made at midlatitudes at a longitude near that of the equatorial scintillation measurement site. It is not clear at this time how such measurements might be made.

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- 8. Jacchia, L.G., J. Slowey, and F. Verniani, Geomagnetic Perturbations and Upper Atmosphere Heating, Journal of Geophysical Research, v 72, no 5, pp 1423 1434, March 1967.
- 9. Jones, K.L., and H. Rishbeth, The Origin of Storm Increases of Mid-Latitude F-Layer Electron Concentration, Journal of Atmospheric and Terrestrial Physics, v 33, pp 391 401, 1971.

APPENDIX

Table I.	Cross-correlation values for figure 3.
Table II.	Cross-correlation values for figure 4.
Table III.	Cross-correlation values for figure 5.
Table IV.	Cross-correlation values for figure 6.
Table V.	Cross-correlation values for figure 7.
Table VI.	Cross-correlation values for figure 8.
Table VII.	Cross-correlation values for figure 9.
Table VIII.	Cross-correlation values for figure 10
Table IX.	Cross-correlation values for figure 11
Table X	Cross-correlation values for figure 12

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Table I. Cross-correlation values for figure 3.

INDIAN OCEAN UHF 1979

K _I	μ 1		2		3		4	
JAN.	0.154	0.095	0.024	0.048	0.076	0.174	0.234	0.145
211111	-0.235	-0.332	-0.411	-0.409	-0.344	-0.328	-0.266	-0.346
FEB.	-0.571	-0.656	-0.627	-0.602	-0.520	-0.604	-0.659	-0.687
	-0.476	-0.485	-0.376	-0.379	-0.339	-0.488	-0.589	-0.592
MAR.	-0.311	-0.305	-0.268	-0.986	-0.408	-0.434	-0.414	-0.312
	-0.389	-0.435	-0.472	-0.604	-0.582	-0.557	-0.479	-0.391
APR.	-0.572	-0.610	-0.618	-0.651	-0.632	-0.627	-0.582	-0.551
	-0.376	-0.412	-0.426	-0.474	-0.492	-0.510	-0.492	-0.485
MAY	0.870	0.019	-0.031	-0.000	-0.141	-0.321	-0.451	-0.380
	0.032	-0.027	-0.079	-0.112	-0.140	-0.287	-0.377	-0.297
JUNE	-0.146	-0.192	-0.210	-0.197	-0.166	-0.260	-0.299	-0.115
	-0.176	-0.164	-0.129	-0.192	-0.231	-0.315	-0.338	-0.213
JULY	0.031	0.066	0.100	-0.142	-0.366	-0.311	-0.204	-0.166
	0.045	0.004	-0.055	-0.158	-0.208	-0.056	0.061	0.209
AUG.	-0.442	-0.542	-0.584	-0.511	-0.389	-0.272	-0.138	0.033
	-0.486	-0.506	-0.472	-0.562	-0.563	-0.511	-0.408	-0.374
SEP.	-0.475	-0.542	-0.512	-0.651	-0.660	-0.555	-0.358	-0.328
	-0.232	-0.242	-0.228	-0.419	-0.551	-0.532	-0.445	-0.325
OCT.	-0.010	-0.020	-0.030	-0.059	-0.073	-0.173	-0.250	-0.074
	-0.328	-0.333	-0.301	-0.260	-0.153	-0.272	-0.360	-0.149
NOV.	-0.147	-0.099	-0.048	-0.044	-0.030	-0.038	-0.040	0.126
	-0.170	-0.172	-0.152	-0.066	0.037	0.023	0.002	0.055
DEC.	0.067	-0.025	-0.109	-0.010	0.103	-0.032	-0.157	-0.100
E i	p 5		6		7		8	
Fj	p 5		6		7		8	
	0.051	0.044	0.034	0.077	0.105	0.081	0.045	0.070
JAH.	0.051 -0.376	-0.334	0.034 -0.242	-0.255	0.105 -0.227	-0.263	0.045 -0.271	-0.186
JAH.	0.051 -0.376 -0.652	-0.334 -0.628	0.034 -0.242 -0.537	-0.255 -0.567	0.105 -0.227 -0.537	-0.263 -0.506	0.045 -0.271 -0.432	-0.136 -0.461
JAH. FEB.	0.051 -0.376 -0.652 -0.554	-0.334 -0.628 -0.502	0.034 -0.242 -0.537 -0.402	-0.255 -0.567 -0.417	0.105 -0.227 -0.537 -0.387	-0.263 -0.506 -0.362	0.045 -0.271 -0.432 -0.321	-0.186 -0.461 -0.447
JAH.	0.051 -0.376 -0.652 -0.554 -0.192	-0.334 -0.628 -0.502 -0.197	0.034 -0.242 -0.537 -0.402 -0.191	-0.255 -0.567 -0.417 -0.312	0.105 -0.227 -0.537 -0.387 -0.283	-0.263 -0.506 -0.362 -0.344	0.045 -0.271 -0.432 -0.321 -0.348	-0.186 -0.461 -0.447 -0.414
JAH. FEB. MAR.	0.051 -0.376 -0.652 -0.554 -0.192 -0.276	-0.334 -0.628 -0.502 -0.197 -0.300	0.034 -0.242 -0.537 -0.402 -0.191 -0.287	-0.255 -0.567 -0.417 -0.312 -0.364	0.105 -0.227 -0.537 -0.387 -0.283 -0.307	-0.263 -0.506 -0.362 -0.344 -0.366	0.045 -0.271 -0.432 -0.321 -0.348 -0.327	-0.186 -0.461 -0.447 -0.414 -0.322
JAH. FEB.	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492	-0.334 -0.628 -0.502 -0.197 -0.300 -0.465	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421
JAH. FEB. MAR. APR.	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492 -0.443	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.403	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.371	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.310	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324
JAH. FEB. MAR.	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492 -0.443 -0.265	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.371 -0.209	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.310 -0.135	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324
JAH. FEB. MAR. APR. MAY	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492 -0.443 -0.265 -0.190	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266 -0.226	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275 -0.311	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.371 -0.205 -0.273	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.310 -0.135 -0.214	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324 -0.111 -0.158
JAH. FEB. MAR. APR.	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492 -0.442 -0.265 -0.190 -0.039	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 0.010	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266 -0.216	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275 -0.311 -0.114	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.371 -0.205 -0.273 -0.153	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.310 -0.135 -0.214 -0.180	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324 -0.111 -0.158 -0.101
JAH. FEB. MAR. APR. MAY JUNE	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.492 -0.447 -0.265 -0.190 -0.039 -0.069	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266 -0.226	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.009	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275 -0.311 -0.114 -0.074	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.371 -0.205 -0.273 -0.153 -0.152	0.045 -0.271 -0.432 -0.321 -0.348 -0.382 -0.310 -0.135 -0.214 -0.180 -0.232	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324 -0.111 -0.158 -0.101
JAH. FEB. MAR. APR. MAY JUNE	0.051 -0.376 -0.652 -0.554 -0.192 -0.276 -0.442 -0.265 -0.190 -0.039 -0.069 -0.109	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266 -0.226 -0.018 0.058 -0.155	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.009 -0.307	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275 -0.311 -0.114 -0.074 -0.275	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.205 -0.273 -0.153 -0.152 -0.215	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.135 -0.135 -0.214 -0.180 -0.232 -0.027	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.324 -0.111 -0.158 -0.101 -0.185
JAH. FEB. MAR. APR. MEY JUNE JULY	0.051 -0.376 -0.652 -0.554 -0.192 -0.492 -0.447 -0.265 -0.190 -0.039 -0.069 -0.109	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260	8.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.339 -0.266 -0.226 -0.018 0.058 -0.155 0.147	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.095	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.409 -0.275 -0.311 -0.114 -0.074 -0.275 0.036	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.205 -0.273 -0.153 -0.152 -0.215 0.096	0.045 -0.271 -0.432 -0.321 -0.348 -0.382 -0.310 -0.135 -0.214 -0.180 -0.232 -0.027	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076
JAH. FEB. MAR. APR. MAY JUNE	0.051 -0.376 -0.652 -0.554 -0.192 -0.442 -0.443 -0.265 -0.199 -0.099 -0.109 0.334 0.193	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260 -0.117	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.366 -0.266 -0.018 0.058 -0.155 0.147	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.095 -0.095	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.408 -0.275 -0.311 -0.114 -0.074 -0.275 0.036 0.106	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.205 -0.273 -0.153 -0.152 -0.215 0.096 0.110	0.045 -0.271 -0.432 -0.321 -0.348 -0.382 -0.310 -0.135 -0.135 -0.214 -0.180 -0.232 -0.027 -0.141 -0.095	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076
JAH. FEB. MAR. APR. JUNE JULY AUG.	0.051 -0.376 -0.652 -0.592 -0.192 -0.442 -0.442 -0.265 -0.190 -0.069 -0.109 -0.334 -0.308	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260 -0.117 -0.293	0.034 -0.242 -0.537 -0.402 -0.191 -0.363 -0.363 -0.266 -0.218 0.058 -0.155 0.147 0.034 -0.242	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.095 -0.095 -0.168	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.409 -0.275 -0.311 -0.114 -0.074 -0.275 0.036 0.106 -0.072	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.205 -0.153 -0.153 -0.152 -0.215 0.096 0.110 -0.655	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.310 -0.135 -0.135 -0.214 -0.180 -0.232 -0.027 -0.141 -0.095 -0.023	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.045
JAH. FEB. MAR. APR. JUNE JULY AUG.	0.051 -0.376 -0.652 -0.554 -0.192 -0.442 -0.443 -0.265 -0.199 -0.099 -0.109 0.334 0.193	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260 -0.117	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.366 -0.266 -0.018 0.058 -0.155 0.147	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.302 -0.078 -0.095 -0.095	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.409 -0.275 -0.311 -0.114 -0.974 -0.275 0.036 0.105 -0.372 -0.273	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.205 -0.273 -0.153 -0.152 -0.215 0.096 0.110	0.045 -0.271 -0.432 -0.321 -0.348 -0.382 -0.310 -0.135 -0.135 -0.214 -0.180 -0.232 -0.027 -0.141 -0.095	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076
JAH. FEB. MAR. APR. JUNE JULY AUG.	0.051 -0.376 -0.652 -0.192 -0.192 -0.442 -0.265 -0.199 -0.099 -0.109 -0.334 -0.308 -0.258	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260 -0.117 -0.293 -0.282	0.034 -0.242 -0.537 -0.402 -0.191 -0.363 -0.363 -0.266 -0.226 -0.018 0.058 -0.155 0.147 0.034 -0.242 -0.274	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.009 -0.078 -0.095 -0.072 -0.168 -0.325 -0.266	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.409 -0.275 -0.311 -0.114 -0.074 -0.275 0.036 0.106 -0.072	-0.263 -0.506 -0.362 -0.344 -0.371 -0.205 -0.153 -0.153 -0.152 -0.215 0.096 0.110 -0.055 -0.132	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.382 -0.310 -0.135 -0.214 -0.180 -0.232 -0.027 -0.141 -0.095 -0.023 -0.023	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.045 0.121 0.107
JAM. FEB. MAR. APR. JUNE JULY AUG. SEP.	0.051 -0.376 -0.652 -0.554 -0.192 -0.442 -0.265 -0.199 -0.039 -0.109 -0.109 -0.334 -0.358 -0.128	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.216 -0.004 -0.141 -0.260 -0.117 -0.293 -0.282 -0.192	0.034 -0.242 -0.537 -0.402 -0.191 -0.363 -0.366 -0.266 -0.018 0.958 -0.155 0.147 0.034 -0.242 -0.242	-0.255 -0.567 -0.417 -0.364 -0.415 -0.369 -0.307 -0.078 -0.095 -0.095 -0.168 -0.325	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.409 -0.275 -0.311 -0.114 -0.974 -0.275 0.036 0.105 -0.372 -0.273 -0.273	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.273 -0.153 -0.153 -0.154 -0.096 -0.110 -0.055 -0.132 -0.044	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.310 -0.135 -0.135 -0.141 -0.095 -0.023 -0.023	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.045 0.121
JAM. FEB. MAR. APR. JUNE JULY AUG. SEP.	0.051 -0.376 -0.652 -0.554 -0.192 -0.442 -0.265 -0.199 -0.039 -0.109 -0.334 -0.338 -0.258 -0.128 -0.128	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.010 -0.004 -0.141 0.260 0.117 -0.293 -0.282 -0.192 0.054	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.266 -0.018 -0.058 -0.155 -0.147 -0.034 -0.242 -0.274 -0.242 -0.066 -0.079 -0.310	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.009 -0.078 -0.095 -0.168 -0.168 -0.102 -0.124 -0.324	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.409 -0.275 -0.311 -0.114 -0.074 -0.075 -0.036 -0.105 -0.273 -0.217	-0.263 -0.506 -0.362 -0.344 -0.366 -0.423 -0.273 -0.153 -0.153 -0.154 -0.096 -0.110 -0.055 -0.132 -0.185	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.310 -0.135 -0.1214 -0.180 -0.232 -0.027 -0.141 -0.095 -0.023 -0.023	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.045 0.107 0.067
JAH. FEB. MAR. APR. JUNE JULY AUG. SEP. OCT. NOV.	0.051 -0.376 -0.652 -0.554 -0.192 -0.492 -0.492 -0.265 -0.190 -0.039 -0.039 -0.109 -0.334 -0.338 -0.193 -0.128 -0.128 -0.128	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.004 -0.141 0.260 -0.147 -0.293 -0.292 -0.192 0.054 0.085 0.307 0.118	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.266 -0.018 -0.058 -0.155 -0.147 -0.034 -0.242 -0.274 -0.242 -0.066 -0.079 -0.310	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.301 -0.009 -0.009 -0.307 -0.095 -0.168 -0.266 -0.102 -0.124	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.427 -0.409 -0.275 -0.311 -0.114 -0.074 -0.275 -0.317 -0.166 -0.026 -0.022	-0.263 -0.506 -0.364 -0.366 -0.423 -0.273 -0.153 -0.153 -0.154 -0.055 -0.132 -0.185 0.185 0.364	0.045 -0.271 -0.432 -0.321 -0.348 -0.382 -0.310 -0.135 -0.1214 -0.180 -0.232 -0.027 -0.141 -0.095 -0.023 -0.023 -0.144 -0.186 -0.184	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.45 0.107 0.067
JAH. FEB. MAR. APR. JUNE JULY AUG. SEP. OCT. NOV.	0.051 -0.376 -0.652 -0.554 -0.192 -0.492 -0.492 -0.265 -0.190 -0.039 -0.039 -0.109 -0.334 -0.338 -0.193 -0.128 -0.128 -0.128	-0.324 -0.628 -0.502 -0.197 -0.300 -0.465 -0.417 -0.279 -0.010 -0.004 -0.141 0.260 0.117 -0.293 -0.282 -0.192 0.054 0.085 0.307	0.034 -0.242 -0.537 -0.402 -0.191 -0.287 -0.363 -0.266 -0.018 -0.058 -0.155 -0.147 -0.034 -0.242 -0.274 -0.242 -0.066 -0.079 -0.310	-0.255 -0.567 -0.417 -0.312 -0.364 -0.415 -0.389 -0.311 -0.009 -0.078 -0.095 -0.168 -0.168 -0.102 -0.124 -0.324	0.105 -0.227 -0.537 -0.387 -0.283 -0.307 -0.409 -0.275 -0.311 -0.114 -0.074 -0.275 -0.215 -0.273 -0.217 0.211 0.164 0.339	-0.263 -0.506 -0.364 -0.366 -0.423 -0.273 -0.153 -0.153 -0.154 -0.055 -0.132 -0.185 0.185 0.364	0.045 -0.271 -0.432 -0.321 -0.348 -0.327 -0.310 -0.135 -0.1214 -0.180 -0.232 -0.027 0.141 0.095 -0.023 0.052 0.114 0.136 0.184 0.366	-0.186 -0.461 -0.447 -0.414 -0.322 -0.421 -0.158 -0.101 -0.185 -0.055 0.076 0.003 -0.045 0.107 0.067 0.016

Table II. Cross-correlation values for figure 4.

PACIFIC OCEAN UHF 1979

Kκ	. 1		2		3		4	
TEN	-0.101	-0.049	0.009	0.042	0.035	0.163	0.203	0.132
V////	-0.235	-0.316	-0.379	-0.372	-0.305	-0.303	-0.260	-0.367
FEB.	-0.457	-0.477	-0.414	-0.427	-0.398	-0.446	-0.469	-0.524
	-0.459	-0.468	-0.363	-0.37ϵ	-0.345	-0.400	-0.417	-0.461
MAR.	-0.537	-0.571	-0.557	-0.533	-0.377	-0.314	-0.227	-0.180
	-0.569	-0.649	-0.720	-0.705	-0.499	-0.411	-0.293	-0.263
APR.	-0.641	-0.708	-0.743	-0.724	-0.643	-0.628	-0.573	-0.579
	-0.494	-0.537	-0.550	-0.565	-0.540	-0.537	-0.492	-0.427
MAY	-0.142	-0.254	-0.334	-0.389	-0.393	-0.397	-0.332	-0.271
	-0.331	-0.419	-0.474	-0.503	-0.491	-0.492	-9.377	-0.345
JUNE	-0.588	-0.536	-0.422	-0.450	-0.437	-0.512	-0.443	-0.271
	-0.382	-0.288	-0.151	-0.170	-0.166	-0.181	-0.161	-0.079
JULY	-0.037	0.036	0.131	0.092	0.027	0.174	0.261	0.280
	-0.042	-0.053	-0.058	-8.174	-0.231	-0.040	0.102	0.127
AUG.	-0.333	-0.351	-0.326	-0.376	-0.396	-0.349	-0.259	-0.192
	-0.305	-0.283	-0.229	-0.293	-0.312	-0.319	-0.290	-0.221
SEP.	-0.506	-0.541	-0.483	-0.560	-0.528	-0.423	-0.247	-0.178
	-0.498	-0.532	-0.513	-0.622	-0.639	-0.589	-0.463	-0.393
OCT.	-0.167	-0.236	-0.283	-0.293	-0.249	-0.293	-0.303	-0.210
	-0.194	-0.200	-0.183	-0.171	-0.117	-0.244	-0.348	-0.130
NOV.	0.064	0.097	0.122	0.138	0.129	0.104	0.057	0.206
	ð.376	0.325	0.241	0.280	0.272	0.296	0.284	0.207
DEC.	0.140	0.161	0.155	0.130	0.092	0.036	-0.040	-0.014
K	p 5		6		7		8	
		-0.039		-0.053		-0.065		-0.115
	0.055	-0.039 -0.415	-0.110	-0.053 -0.391	0.000	-0.165 -0.337	-0.127	-0.115 -0.193
JAN.	0.055 -0.418	-0.415	-0.110 -0.347	-0.391	0.000 -0.371	-0.337	-0.127 -0.269	-0.193
	0.055 ~0.418 ~0.528	-0.415 -0.543	-0.110 -0.347 -0.496	-0.391 -0.519	0.000 -0.371 -0.487	-0.337 -0.440	-0.127 -0.269 -0.354	
JAN. FEB.	0.055 -0.418 -0.528 -0.471	-0.415 -0.543 -0.500	-0.110 -0.347 -0.496 -0.483	-0.391 -0.519 -0.494	0.000 -0.371 -0.487 -0.452	-0.337	-0.127 -0.269	-0.193 -0.357
JAN.	0.055 -0.418 -0.528 -0.471 -0.121	-0.415 -0.543 -0.500 -0.153	-0.110 -0.347 -0.496	-0.391 -0.519	0.000 -0.371 -0.487	-0.337 -0.440 -0.387	-0.127 -0.269 -0.354 -0.310	-0.193 -0.357 -0.414
JAN. FEB.	0.055 -0.418 -0.528 -0.471	-0.415 -0.543 -0.500	-0.110 -0.347 -0.496 -0.483 -0.175	-0.391 -0.519 -0.494 -0.261	0.000 -0.371 -0.487 -0.452 -0.233	-0.337 -0.440 -0.387 -0.298	-0.127 -0.269 -0.354 -0.010 -0.343	-0.193 -0.357 -0.414 -0.406
JAN. FEB. MAR.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216	-0.415 -0.543 -0.500 -0.153 -0.154	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075	-0.391 -0.519 -0.494 -0.261 -0.206	0.000 -0.371 -0.487 -0.452 -0.233 -0.197	-0.337 -0.440 -0.387 -0.298 -0.209	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333
JAN. FEB. MAR.	0.055 ~0.418 ~0.528 ~0.471 ~0.121 ~0.216 ~0.554	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493	-0.110 -0.347 -0.496 -0.483 -0.175 -0.375 -0.347	-0.391 -0.519 -0.494 -0.261 -0.206 -0.322	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.095	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125
JAN. FEB. MAP. APR.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.376	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.147 -0.385	-0.391 -0.519 -0.494 -0.261 -0.206 -0.322 -0.475	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.095 -0.366	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043
JAN. FEB. MAR. APR. MAY	0.055 ~0.418 ~0.528 ~0.471 ~0.121 ~0.216 ~0.554 ~0.332 ~0.179	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.376 -0.215	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.347 -0.385 -0.232 -0.337	-0.391 -0.519 -0.494 -0.261 -0.206 -0.322 -0.475 -0.180	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.054	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.008	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.095 -0.366 -0.076 -0.122 -0.084	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071
JAN. FEB. MAR. APR. MAY	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.279	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.376 -0.215 -0.348	-0.110 -0.347 -0.496 -0.483 -0.175 -0.375 -0.347 -0.385 -0.232 -0.337	-0.391 -0.519 -0.494 -0.261 -0.306 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.193 -0.203 -0.349	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047	-0.127 -0.269 -0.354 -0.010 -0.243 -0.116 -0.095 -0.366 -0.076 -0.122 -0.084 -0.039	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071
JAN. FEB. MAR. APR. MAY	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.279 -0.099 -0.002	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.376 -0.215 -0.343 -0.166	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.347 -0.385 -0.232 -0.337	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035 -0.001	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.198 -0.203	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.095 -0.366 -0.076 -0.122 -0.084 -0.039	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.072 -0.013
JAN. FEB. MAR. APR. MAY JUNE JULY	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.079 -0.099 0.002 0.142	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.215 -0.348 -0.166 -0.006 0.165	-0.110 -0.347 -0.496 -0.483 -0.175 -0.375 -0.385 -0.232 -0.387 -0.215 -0.013 -0.055 -0.059	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035 -0.001 -0.077	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.193 -0.203 -0.049 -0.053 -0.084	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.095 -0.366 -0.076 -0.122 -0.084 -0.039	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.033 -0.043 -0.111 -0.072 -0.012 -0.013
JAN. FEB. MAR. APR. MAY JUNE JULY	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.279 -0.099 0.002 0.260	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.215 -0.248 -0.166 -0.006 0.165	-0.110 -0.347 -0.496 -0.483 -0.175 -0.375 -0.385 -0.232 -0.387 -0.215 -0.013 -0.055 -0.059 -0.011	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035 -0.001 -0.077 -0.002	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.193 -0.203 -0.049 -0.053 -0.084 0.007	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002 -0.017	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.051 0.109 0.183	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.033 -0.011 -0.071 -0.012 -0.012 -0.034
JAN. FEB. MAR. APR. MAY JUNE JULY AUG.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 0.002 0.260 0.142 -0.112 -0.131	-0.415 -0.543 -0.500 -0.153 -0.154 -0.376 -0.215 -0.348 -0.166 -0.006 0.165 -0.058	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.337 -0.215 -0.013 -0.059 -0.06	-0.391 -0.519 -0.494 -0.266 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035 -0.001 -0.077 -0.002 0.024	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.193 -0.203 -0.049 -0.053 -0.084 0.007	-0.337 -0.440 -0.387 -0.298 -0.209 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002 0.017 0.100 0.083	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.051 0.109 0.183 0.117	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071 -0.012 -0.034 -0.108 -0.070
JAN. FEB. MAR. APR. MAY JUNE JULY AUG.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.002 -0.142 -0.112 -0.131 -0.086	-0.415 -0.543 -0.500 -0.153 -0.154 -0.453 -0.215 -0.348 -0.166 -0.006 0.165 -0.054 -0.058 -0.175	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.055 -0.059 -0.011	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.035 -0.001 -0.077 -0.002 -0.024 -0.314	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.193 -0.203 -0.049 -0.053 -0.049 -0.07	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002 -0.017 -0.100 -0.083 -0.131	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.051 0.109 0.183 0.117 0.057	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071 -0.012 -0.034 -0.108 -0.099
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.002 -0.142 -0.112 -0.131 -0.086 -0.232	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.215 -0.348 -0.166 -0.066 0.165 -0.054 -0.058 -0.179 -0.291	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.055 -0.059 -0.011 -0.066 -0.252 -0.326	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.001 -0.077 -0.002 -0.024 -0.314 -0.419	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.094 -0.093 -0.049 -0.053 -0.049 -0.07 0.041 -0.278 -0.403	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.068 -0.167 -0.07 -0.002 -0.017 -0.100 -0.083 -0.131 -0.200	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.051 0.109 0.183 0.117 0.057	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071 -0.012 -0.034 -0.108 -0.099 -0.067
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.099 -0.142 -0.112 -0.131 -0.086 -0.232 -0.079	-0.415 -0.543 -0.500 -0.153 -0.154 -0.376 -0.215 -0.348 -0.166 -0.006 -0.054 -0.058 -0.175 -0.251 -0.087	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.055 -0.059 -0.011 -0.066 -0.326 -0.326	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.001 -0.077 -0.002 -0.024 -0.314 -0.419 -0.625	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.093 -0.049 -0.053 -0.049 -0.07 0.041 -0.278 -0.404	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.088 -0.167 -0.158 -0.047 -0.002 -0.017 -0.100 -0.083 -0.131 -0.200 -0.021	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.109 0.109 0.109 0.109	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.333 -0.043 -0.111 -0.071 -0.012 -0.034 -0.108 -0.099 -0.067
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.099 -0.086 -0.142 -0.131 -0.086 -0.232 -0.195	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.215 -0.343 -0.166 -0.006 0.165 -0.058 -0.058 -0.175 -0.087	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.059 -0.011 -0.066 -0.326 -0.326 -0.326	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.001 -0.077 -0.002 -0.024 -0.314 -0.419 -0.025	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.093 -0.049 -0.053 -0.049 -0.07 0.041 -0.278 -0.408	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.088 -0.167 -0.092 -0.017 -0.100 -0.083 -0.131 -0.200 -0.021 -0.201	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.109 0.109 0.109 0.109 0.117 0.057 0.016	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.033 -0.011 -0.070 -0.019 -0.099 -0.067 -0.044 -0.025
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.099 -0.086 -0.142 -0.112 -0.131 -0.086 -0.232 -0.079 -0.085	-0.415 -0.543 -0.500 -0.153 -0.154 -0.376 -0.215 -0.343 -0.166 -0.066 -0.058 -0.058 -0.175 -0.087 -0.087	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.059 -0.011 -0.066 -0.326 -0.326 -0.326	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.001 -0.077 -0.002 -0.024 -0.314 -0.477	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.053 -0.049 -0.053 -0.049 -0.07 -0.041 -0.278 -0.404 -0.228 -0.503	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.068 -0.167 -0.07 -0.002 -0.017 -0.100 -0.083 -0.131 -0.200 -0.021 -0.434	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.109 0.109 0.109 0.109 0.117 0.057 0.016 -0.020 0.142 0.328	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.033 -0.011 -0.070 -0.012 0.070 0.099 0.067 0.044 0.025 0.256
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP.	0.055 -0.418 -0.528 -0.471 -0.121 -0.216 -0.554 -0.332 -0.179 -0.099 -0.099 -0.002 -0.142 -0.112 -0.131 -0.086 -0.232 -0.195 -0.337 -0.112	-0.415 -0.543 -0.500 -0.153 -0.154 -0.493 -0.215 -0.343 -0.166 -0.006 0.165 -0.058 -0.058 -0.175 -0.087	-0.110 -0.347 -0.496 -0.483 -0.175 -0.075 -0.385 -0.232 -0.387 -0.215 -0.013 -0.059 -0.011 -0.066 -0.326 -0.326 -0.326	-0.391 -0.519 -0.494 -0.261 -0.322 -0.475 -0.180 -0.314 -0.230 -0.001 -0.077 -0.002 -0.024 -0.314 -0.419 -0.025	0.000 -0.371 -0.487 -0.452 -0.233 -0.197 -0.268 -0.524 -0.093 -0.049 -0.053 -0.049 -0.07 0.041 -0.278 -0.408	-0.337 -0.440 -0.387 -0.298 -0.181 -0.458 -0.088 -0.167 -0.092 -0.017 -0.100 -0.083 -0.131 -0.200 -0.021 -0.201	-0.127 -0.269 -0.354 -0.010 -0.343 -0.116 -0.076 -0.122 -0.084 -0.039 0.109 0.109 0.109 0.109 0.117 0.057 0.016	-0.193 -0.357 -0.414 -0.406 -0.149 -0.125 -0.033 -0.011 -0.070 -0.019 -0.099 -0.067 -0.044 -0.025

Table III. Cross-correlation values for figure 5.

INDIAN OCEAN WHE 1979

	y by T		2		ja Zi			
MAR	0.420						4	
11117				-0.467	' -0.482	-0.494		_
APR	-6.436			-0.685	-0.654			
nrk				-0.€84				
he const	-0.355			-0.500				-0.578
MAY			-0.133	-8,211	-0.269	~		~0.506
	0.065		-0.023	-0.061	-0.100		-0.563	-0.403
JUH	E -0.880		-0.103	-0.078			-0.466	-0.366
	~0.302	-0.320	-0.264	-0.298	-0.64€	-0.246	-0.430	-0.215
JUL.		0.040	0.097	-0.270	-0.289	-0.384	-0.403	-0.257
	0.029	-0.016	-0.075	-0.157	-0.376	-0.320	-0.216	-0.183
AUG.	. ~0.354	-0.444	-0.430	-0.191	-3.243	-0.118	-0.010	0.085
	-0.350		-0.354	-0.438	-0.442	-0.420	-0.338	-0.199
SEP.	~0.465		-0.504 -0.507	-0.510	-0.591	-0.613	-6.566	-0.522
	-0.356	-0.370		-0.666	-0.692	-0.586	-0.384	-0.333
00T.		-0.254	-0.347	-0.506	-0 .5 93	-0.587	-0.507	
	-0.423		-0.259	-0.238	-0.172	-0.282	-0.363	-0.365
NOV.	-0.185	-0.431	-0.392	-0.318	-0.161	-0.265	-0.332	-0.202
	0.160	-0.141	-0.093	-0.095	-0.078	-0.063	-0.036 -0.036	-0.177
E	p 5						0.000	0.082
••	fe -'		6		7		8	
MAR.	-0.256	-0.252					•4	
•	-0.334		-0.235	-0.314	-0.274	-0.321	-0.292	
APP.	~0.525	-0.339	-0.303	-0.370	-0.369	-0.357	-0.238	-0.366
	-0.450	~0.472	-0.337	-0.385	-0.396	-0.38:		-0.283
MAY	-0.450	-0.412	-0.318	-0.368	-0.387	-0.355	-0.333	-0.361
11111	70.345	-0.365	-0.349	-0.323	-0.223	-0.173	-0.300	-0.301
JUNE	-0.231	-0.236	-0.225	-0.282	-0.285	-0.173 -0.273	-0.115	-0.042
10116	-0.021	-0.014	-0.007	-0.127	-0.205	-0.240	-0.234	-0.133
1111 11	-0.087	-0.024	0.007	-0.016	-0.065	-0.24M	-0.253	-0.140
1001	-0.129	-0.156	-3.165	-0.322	-0.392	-0.118	-0.176	-0.124
	0.167	0.001		-0.085	-0.123	-0.261	-0.097	-0.122
	-0.049	-0.098		-0.095	~0.052	-0.051	0.022	-0.057
	~0.433	-0.400	_	-0.265	70.002 6.405	-0.053	∽0.044	-0.120
	-0.241	-0.295		-0.350	-0.175	-0.210	-0.203	-0.187
	าตัว135	-0.158			-0.263	-0.154	0.008	0.072
007.	-0.009	-0.004	0.001	-0.238 0.044	-0.253	-0.013	0.196	0.251
	0.007	0.023	5.032		0.087	0.125	9.145	0.160
HOV.	0.193	0.234	0.253	0.074	0.112	0.137	0.147	0.033
	_		0.200	0.282	0.295	0.327	0.338	0.226

Table IV. Cross-correlation values for figure 6.

PACIFIC OCEAN UHF 1979

Kp	o 1		2		3		4	
MAR.	-0.518	-0.557	-0.553	-0.551	-0.413	-0.356	-0.271	-0.212
	-0.572	-0.646	-0.711	-0.736	-0.563	-0.496	-0.786	-0.357
APR.	-0.625	-0.699	-0.742	-0.730	-J.655	-0.635	-0.574	-0.502
	-0.455	-0.510	-0.537	-0.563	-0.550	-0.540	-0.486	-0.455
MAY	-0.160	-0.273	-0.353	-0.395	-0.385	-0.374	-0.296	-0.247
	-0.162	-0.241	-0.299	-0.321	-0.317	-0.312	-0.232	-0.194
JUNE	-0.379	-0.295	-0.183	-0.222	-0.241	-0.305	-0.251	-0.082
	-0.387	-0.30?	-0.182	-0.181	-0.152	-0.127	-0.076	0.023
JULY	-0.032	0.039	0.133	0.094	0.029	0.198	0.298	0.324
	-0.064	-0.047	-0.014	-0.148	-0.228	-0.094	0.017	0.038
AUG.	-0.297	-0.305	-0.275	-0.347	-0.390	-0.391	-0.331	-0.288
	-0.240	-0.230	-0.194	-0.305	-0.372	-0.383	-0.351	-0.277
SEP.	-0.462	-0.427	-0.326	-0.455	-0.493	-0.418	-0.274	-0.294
	-0.513	-0.466	-0.368	-0.485	-0.532	-0.528	-0.458	-0.447
007.	-0.246	-0.300	-0.323	-0.325	-0.266	-0.334	-0.364	-0.233
	-0.259	-0.245	-0.203	-0.206	-0.162	-0.271	-0.348	-0.177
NOV.	0.016	0.042	0.063	0.052	0.028	0.021	8.009	0.096
Kp	0 5		6		7		c	
K _i MAR.	-	-0.180	6 -0.209	-0.268	7 -0.132	-0.285	0 -0.296	-0.3S6
	-	-0.180 -0.236		-0.268 -0.233		-0.235 -0.218		-0.356 -0.170
	-0.141		-0.209		-0.132		-0.296	· · ·
MAR.	-0.141 -0.304	-0.236	-0.209 -0.140	-0.233	-0.132 -0.208	-0.218	-0.296 -0.113	-0.170
MAR.	-0.141 -0.304 -0.559	-0.236 -0.489	-0.209 -0.140 -0.331	-0.233 -0.309 -0.474 -0.136	-0.132 -0.208 -0.258	-0.218 -0.169	-0.296 -0.113 -0.061	-0.170 -0.128
MAR. APR.	-0.141 -0.304 -0.559 -0.391	-0.236 -0.489 -0.419	-0.209 -0.140 -0.331 -0.406	-0.233 -0.309 -0.474	-0.232 -0.208 -0.258 -0.502	-0.218 -0.169 -0.454	-0.296 -0.113 -0.081 -0.377	-0.170 -0.128 -0.342
MAR. APR.	-0.141 -0.304 -0.559 -0.391 -0.168	-0.236 -0.489 -0.419 -0.200	-0.209 -0.140 -0.331 -0.406 -0.213	-0.233 -0.309 -0.474 -0.136	-0.132 -0.208 -0.258 -0.502 -0.033	-0.218 -0.169 -0.454 -0.054	-0.296 -0.113 -0.061 -0.377 -0.064	-0.170 -0.128 -0.342 -0.338
MAR. APR. MAY	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136	-0.236 -0.489 -0.419 -0.200 -0.201	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247	-0.233 -0.309 -0.474 -0.136 -0.134	+0.132 +0.208 +0.258 +0.502 +0.033 +0.018 0.008 0.023	-0.218 -0.169 -0.454 -0.054 -0.015	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012	-0.170 -0.128 -0.342 -0.338 -0.016
MAR. APR. MAY	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085	-0.236 -0.489 -0.419 -0.206 -0.201 -0.050	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004	-0.233 -0.309 -0.474 -0.136 -0.134 -0.012	+0.132 +0.208 +0.258 +0.502 +0.033 +0.018 0.008	-0.218 -0.169 -0.454 -0.054 -0.015 0.049	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.092	-0.170 -0.128 -0.342 -0.338 -0.016 -0.108
MAR. APR. MAY JUNE	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096	-0.236 -0.489 -0.419 -0.200 -0.201 0.050 0.091 0.162 -0.057	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079	-0.233 -0.309 -0.474 -0.136 -0.124 -0.012 0.059 -0.048 -0.181	-0.132 -0.208 -0.258 -0.502 -0.033 -0.018 0.008 -0.023 -0.036 -0.150	-0.218 -0.169 -0.454 -0.054 -0.015 0.049 0.042 0.001 -0.043	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.092 0.061 0.088 0.061	-0.170 -0.128 -0.342 -0.038 0.016 0.108 0.073 -0.016 -0.045
MAR. APR. MAY JUNE	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096 0.305 0.055 -0.223	-0.236 -0.489 -0.419 -0.200 -0.201 0.050 0.091 0.162 -0.057 -0.165	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004	-0.233 -0.309 -0.474 -0.136 -0.124 -0.012 -0.059 -0.048 -0.181 -0.093	+0.132 +0.208 +0.258 +0.502 +0.033 +0.018 0.008 6.023 +0.036	-0.218 -0.169 -0.454 -0.054 -0.015 0.049 0.042 0.001 -0.043 -0.017	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.092 0.061 0.088 0.061	-0.170 -0.128 -0.342 -0.338 -0.016 -0.108 -0.073 -0.016 -0.045
MAR. APR. MAY JUNE JULY AUG.	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096 0.305 -0.223 -0.173	-0.236 -0.489 -0.419 -0.200 -0.201 0.050 0.091 0.162 -0.057 -0.165 -0.123	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004 -0.183 -0.064	-0.233 -0.309 -0.474 -0.136 -0.124 -0.012 -0.059 -0.048 -0.181 -0.093 -0.076	+0.132 +0.208 +0.258 +0.532 +0.038 +0.008 6.023 +0.036 +0.150 +0.007	-0.218 -0.169 -0.454 -0.054 -0.015 0.049 0.042 0.001 -0.043 -0.017 -0.057	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.092 0.061 0.088 0.061 -0.017	-0.170 -0.128 -0.342 -0.338 -0.016 -0.108 -0.073 -0.016 -0.045 -0.034 -0.079
MAR. APR. MAY JUNE JULY	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096 0.305 -0.223 -0.173 -0.280	-0.236 -0.489 -0.419 -0.201 -0.201 -0.050 -0.091 -0.162 -0.057 -0.165 -0.123 -0.380	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004 -0.183 -0.064 -0.439	-0.233 -0.309 -0.474 -0.136 -0.124 0.012 0.059 -0.048 -0.181 -0.093 -0.076 -0.460	+0.132 +0.208 +0.258 +0.502 +0.033 +0.008 6.023 +0.036 +0.150 +0.007 +0.007 +0.031	-0.218 -0.169 -0.454 -0.054 -0.015 0.049 0.042 0.001 -0.043 -0.017 -0.657 -0.268	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.061 0.088 0.061 -0.017 -0.131	-0.170 -0.128 -0.342 -0.338 0.016 0.108 -0.073 -0.016 -0.045 -0.079 -0.126
MAR. APR. MAY JUNE JULY AUG. SEP.	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096 0.305 -0.223 -0.173 -0.230 -0.334	-0.236 -0.489 -0.419 -0.200 -0.201 0.050 0.091 0.162 -0.057 -0.165 -0.380 -0.387	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004 -0.183 -0.064 -0.439 -0.406	-0.233 -0.309 -0.474 -0.136 -0.124 0.012 0.059 -0.048 -0.181 -0.093 -0.076 -0.460 -0.464	+0.132 +0.208 +0.258 +0.502 +0.033 -0.018 0.008 -0.023 -0.025 -0.150 -0.027 -0.031 -0.396	-0.218 -0.169 -0.454 -0.054 -0.015 -0.042 -0.001 -0.043 -0.017 -0.057 -0.268 -0.231	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.061 0.088 0.061 -0.017 -0.131 -0.047	-0.170 -0.128 -0.342 -0.338 0.016 0.108 -0.073 -0.016 -0.045 -0.034 -0.079 -0.126
MAR. APR. MAY JUNE JULY AUG.	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.096 0.096 0.305 -0.223 -0.173 -0.230 -0.334 -0.062	-0.236 -0.489 -0.419 -0.200 -0.201 -0.050 0.091 -0.162 -0.057 -0.165 -0.380 -0.387 -0.070	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004 -0.183 -0.064 -0.439 -0.406 -0.670	-0.233 -0.309 -0.474 -0.136 -0.124 -0.012 -0.059 -0.048 -0.181 -0.093 -0.460 -0.464 -0.039	+0.132 +0.208 +0.258 +0.502 +0.033 -0.018 0.008 -0.023 -0.025 -0.150 -0.027 -0.031 +0.327 -0.396 0.005	-0.218 -0.169 -0.454 -0.054 -0.015 0.049 0.042 -0.017 -0.057 -0.268 -0.231 0.011	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.088 0.061 0.088 0.061 -0.017 -0.121 -0.047	-0.170 -0.128 -0.342 -0.338 0.016 0.108 -0.016 -0.045 -0.034 -0.079 -0.126 0.006
MAR. APR. MAY JUNE JULY AUG. SEP.	-0.141 -0.304 -0.559 -0.391 -0.168 -0.136 0.085 0.096 0.305 -0.223 -0.173 -0.230 -0.334	-0.236 -0.489 -0.419 -0.200 -0.201 0.050 0.091 0.162 -0.057 -0.165 -0.380 -0.387	-0.209 -0.140 -0.331 -0.406 -0.213 -0.247 0.013 0.079 0.004 -0.183 -0.064 -0.439 -0.406	-0.233 -0.309 -0.474 -0.136 -0.124 0.012 0.059 -0.048 -0.181 -0.093 -0.076 -0.460 -0.464	+0.132 +0.208 +0.258 +0.502 +0.033 -0.018 0.008 -0.023 -0.025 -0.150 -0.027 -0.031 -0.396	-0.218 -0.169 -0.454 -0.054 -0.015 -0.042 -0.001 -0.043 -0.017 -0.057 -0.268 -0.231	-0.296 -0.113 -0.061 -0.377 -0.064 -0.012 0.061 0.088 0.061 -0.017 -0.131 -0.047	-0.170 -0.128 -0.342 -0.338 0.016 0.108 -0.073 -0.016 -0.045 -0.034 -0.079 -0.126

Table V. Cross-correlation values for figure 7.

INDIAN OCEAN L-BAND 1979

K _I	p 1		2		3		4	
MAR.	-0.251	-0.178	-0.068	-0.309	-0.471	-0.507	-0.490	-0.441
	-0.208	-0.253	-0.300	-0.506	-0.591	-0.574	-0.501	-0.466
APE.	-0.515	-0.560	-0.578	-0.632	-0.618	-0.611	-0.565	-0.545
	-0.272	-0.296	-0.302	-0.365	-0.406	-0.433	-0.432	-0.439
MAS	-0.015	-0.040	-0.059	-0.147	-0.227	-0.404	-0.516	-0.499
	0.056	0.031	0.006	-0.059	-0.127	-0.343	-0.493	-0.432
JUNE	-0.126	-0.139	-0.133	-0.110	-0.076	-0.315	-0.527	-0.255
	-0.510	-0.498	-0.417	-0.439	-0.398	-0.455	-0.422	-0.241
JULY	-0.023	0.024	0.087	-0.081	-0.234	-0.181	-0.101	-0.079
	-0.001	-0.003	-0.005	-0.050	-0.142	-0.068	-0.003	0.073
AUG.	-0.311	-0.367	-0.383	-0.407	-0.397	-0.399	-0.340	-0.229
	-0.319	-0.325	-0.295	-0.434	-0.509	-0.505	-0.446	-0.440
SEP.	-0.501	-0.550	-0.504	-0.611	-0.598	-0.520	-0.358	-0.298
	-0.399	-0.432	-0.422	-0.561	-0.619	-0.623	-0.550	-0.393
OCT.	-0.250	-0.285	-0.289	-0.273	-0.205	-0.301	-0.365	-0.194
	-0.410	-0.399	-0.344	-0.253	-0.092	-0.181	+0.251	-0.095
NOV.	-0.171	-0.120	-0.065	-0.059	-0.040	-0.017	0.013	0.122
£į	p 5		6		-		8	
	p 5 -0.365	-0.359		-0.332		-0.313		-0.337
MAR.		-0.359 -0.347	-0.335	-0.332 -0.330	-0.266	-0.313 -0.268	-0.287	-0.037 -0.149
	-0.365	-0.359 -0.347 -0.432		-0.332 -0.360 -0.364	-0.266 -0.245	-0.268	-0.287	-0.149
MAR.	-0.365 -0.400	-0.347	-0.335 -0.254	-0.300	-0.266		-0.287 -0.161 -0.322	-0.149 -0.361
MAR.	-0.365 -0.400 -0.496 -0.413	-0.347 -0.432 -0.366	-0.335 -0.254 -0.290 -0.268	-0.360 -0.364	-0.266 -0.245 -0.402 -0.363	-0.268 -0.377	-0.287 -0.161 -0.322 -0.274	-0.149 -0.361 -0.285
MAR. AFF.	-0.365 -0.400 -0.496	-0.347 -0.432	-0.335 -0.254 -3.290	-0.360 -0.364 -0.336	-0.266 -0.245 -0.402	-0.268 -0.377 -0.329	-0.287 -0.161 -0.322	-0.149 -0.361
MAR. AFF.	-0.365 -0.400 -0.496 -0.413 -0.418	-0.347 -0.432 -0.366 -0.455	-0.335 -0.254 -0.290 -0.263 -0.448	-0.300 -0.364 -0.330 -0.397	-0.266 -0.246 -0.402 -0.363 -0.258 -0.268	-9.268 -0.377 -0.329 -0.197	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249	-0.149 -0.361 -0.285 -0.051 -0.151
MAR. APR. MAY	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327	-0.347 -0.432 -0.366 -0.455 -0.328	-0,335 -0.254 -0.290 -0.268 -0.448 -0.309	-0.300 -0.364 -0.330 -0.397 -0.318	-0.266 -0.245 -0.402 -0.363 -0.259	-0.268 +0.377 -0.329 -0.197 -0.269	-0.287 -0.161 -0.322 -0.274 -0.128	-0.149 -0.361 -0.285 -0.051
MAR. APR. MAY	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006	-0.335 -0.254 -0.250 -0.260 -0.448 -0.309 0.003	-0.360 -0.364 -0.336 -0.397 -0.318 -0.116	-0.266 -0.246 -0.402 -0.363 -0.259 -0.268 -0.195	-0.268 +0.377 -0.329 -0.197 -0.269 -0.225	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130
MAR. APP. MAY JUNE	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017	-0.335 -0.254 -0.259 -0.268 -0.448 -0.309 0.003 0.013	-0.300 -0.364 -0.330 -0.397 -0.318 -0.116 -0.005	-0.266 -0.246 -0.402 -0.363 -0.259 -0.268 -0.195 -0.021	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.001	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.078
MAR. APP. MAY JUNE	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095	-0.335 -0.254 -0.254 -0.268 -0.448 -0.309 0.003 0.013 -0.128	-0.300 -0.364 -0.330 -0.397 -0.218 -0.116 -0.005 -0.222	-0.266 -0.248 -0.402 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.001 -0.155	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.078
MAR. APR. MAY JUNE JULY	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047 -0.049 -0.139	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095 0.045	-0.335 -0.254 -0.290 -0.268 -0.448 -0.309 0.003 0.013 -0.128 -0.73	-0.300 -0.364 -0.330 -0.397 -0.218 -0.116 -0.005 -0.222 -0.101	-0.266 -0.246 -0.402 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256 -0.112	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.061 -0.155 -0.042	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034 -0.027	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.078 -0.088
MAR. APR. MAY JUNE JULY	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047 -0.049 -0.139 -0.103	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095 -0.045 -0.149	-9.335 -0.254 -0.254 -0.290 -0.268 -0.448 -0.309 -0.003 -0.128 -0.128 -0.171	-0.300 -0.364 -0.397 -0.318 -0.116 -0.005 -0.222 -0.101 -0.157 -0.249 -0.293	-0.266 -0.246 -0.402 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256 -0.112 -0.129	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.061 -0.155 -0.042 -0.124	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034 -0.027 -0.098	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.088 -0.063 -0.152
MAR. APP. MAY JUNE JULY AUG.	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047 -0.049 -0.139 -0.103 -0.398	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095 -0.045 -0.149 -0.382	-9.335 -0.254 -0.254 -0.290 -0.268 -0.448 -0.309 -0.003 -0.128 -0.128 -0.073 -0.171 -0.317	-0.300 -0.364 -0.397 -0.318 -0.116 -0.005 -0.222 -0.101 -0.157 -0.249	-0.266 -0.246 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256 -0.112 -0.129 -0.150	-0.268 -0.377 -0.329 -0.197 -0.225 -0.061 -0.155 -0.042 -0.124 -0.189	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034 -0.027 -0.098 -0.196	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.078 -0.088 -0.063 -0.152 -0.173
MAR. APP. MAY JUNE JULY AUG.	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047 -0.049 -0.139 -0.103 -0.398 -0.201	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095 -0.149 -0.382 -0.255	-9.335 -0.254 -0.254 -0.268 -0.448 -0.309 -0.003 -0.128 -0.073 -0.171 -0.317 -0.281	-0.300 -0.364 -0.397 -0.318 -0.116 -0.005 -0.222 -0.101 -0.157 -0.249 -0.293	-0.266 -0.246 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256 -0.112 -0.129 -0.150 -0.206	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.061 -0.155 -0.042 -0.124 -0.189 -0.142	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034 -0.027 -0.098 -0.196 -0.036	-0.149 -0.361 -0.285 -0.051 -0.150 -0.078 -0.088 -0.063 -0.152 -0.173
MAR. APP. MAY JUNE JULY AUG. SEP.	-0.365 -0.400 -0.496 -0.413 -0.418 -0.327 -0.014 -0.047 -0.049 -0.139 -0.103 -0.398 -0.201 -0.142	-0.347 -0.432 -0.366 -0.455 -0.328 -0.006 -0.017 -0.095 -0.149 -0.382 -0.255 -0.173	-9.335 -0.254 -0.254 -0.268 -0.448 -0.309 -0.003 -0.128 -0.128 -0.973 -0.171 -0.317 -0.281 -0.190	-0.300 -0.364 -0.330 -0.397 -0.218 -0.116 -0.005 -0.222 -0.101 -0.157 -0.249 -0.293 -0.282	-0.266 -0.246 -0.363 -0.259 -0.268 -0.195 -0.021 -0.256 -0.112 -0.129 -0.150 -0.306	-0.268 -0.377 -0.329 -0.197 -0.269 -0.225 -0.061 -0.155 -0.042 -0.124 -0.189 -0.142 -0.039	-0.287 -0.161 -0.322 -0.274 -0.128 -0.249 -0.233 -0.104 -0.034 -0.027 -0.098 -0.196 -0.036 0.101	-0.149 -0.361 -0.285 -0.051 -0.151 -0.130 -0.088 -0.063 -0.152 -0.173 0.011 0.160

Table VI. Cross-correlation values for figure 8.

PACIFIC OCEAN OHE PM 1979

K. j	p 1	ā	2	3		4	
MAR.	-0.549	-0.520 -0.5	536 -0.521	-0.377	-0.315	-0.230	-0.179
	-0.554	-0.624 -0.6		-0.544	-0.466	-0.352	-0.324
APR.	-0.153	-0.623 -0.6	69 -0.669	-0.613	-0.583	-0.516	-0.534
	-0.387	-0.450 -0.4	187 -0.528	-0.534	-0.509	-0.442	-0.426
MAY	-0.339	-0.249 -0.3	816 -0.336	-0.210	-0.267	-0.174	-0.154
	-0.092	-0.134 -0.1	164 -0.153	-0.126	-0.117	-0.080	-0.071
JUNE	-0.170	-0.240 -0.1	21 -0.156	-0.177	-0.233	-0.231	0.002
	-0.453	-0.413 -0.3	809 -0.314	-0.272	-0.209	-0.105	0.036
JULY	-0.234	-0.133 -0.6		-0.229	-0.025	0.148	0.132
	-0.138	-0.108 -0.0	9 45 -0. 238	-3.346	-0.265	-0.160	-0.176
AUG.	-0.406	-0.205 -0.1	147 -0.228	-0.293	-0.328	-0.306	-0.273
	-0.203	-0.198 -0.1	171 -0.274	-0.037	-0.334	-0.295	-0.210
SEP.	-0.249	-0.383 -0.3	300 -0.429	-0.471	-0.424	-0.310	-0.314
	-0.536	-0.492 -0.3	394 -0.514	-0.559	-0.566	-0.503	-0.515
OCT.	-0.009	-0.303 -0.3	327 -0.326	-0.265	-0.325	-0.347	-0.244
	-0.251	-0.230 -0.1		-0.138	-0.238	-0.311	-0.171
NOV.	0.292	0.019 0.0	344 0.035	0.017	0.021	0.023	0.095
E _l	p 5	6	5	?		8	
	p 5 -0.118	-3.163 -0.1		7 -0.225	-0.266	8 -0.248	-0.330
			198 -0.260		-0.266 -0.202		-0.330 -0.151
	-0.118	-3.163 -0.1	198 -0.260 142 -0.223	-0.225		-0.248	
MAR.	-0.118 -0.274	-0.163 -0.1 -0.221 -0.1	198 -0.260 142 -0.223 371 -0.323	-0.225 -0.197	-0.202	-0.248 -0.090	-0.151
MAR.	-0.118 -0.274 -0.523	-8.163 -0.1 -0.221 -0.1 -0.488 -0.3	198 -0.260 142 -0.223 371 -0.323 174 -0.519	-0.225 -0.197 -0.246	-0.202 -0.163	-0.248 -0.090 -0.082	-0.151 -0.118
MAR. APR.	-0.118 -0.274 -0.523 -0.378	-8.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1	198 -0.260 142 -0.223 371 -0.323 174 -0.519 152 -0.171 153 -0.076	-0.225 -0.197 -0.246 -0.522	-0.202 -0.163 -0.487	-0.248 -0.090 -0.082 -0.418	-0.151 -0.118 -0.371
MAR. APR.	-0.118 -0.274 -0.523 -0.378 -0.115	-8.163 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1	198 -0.260 142 -0.223 371 -0.323 174 -0.519 152 -0.171 153 -0.076	-0.225 -0.197 -0.246 -0.522 -0.112	-0.202 -0.163 -0.487 -0.126 0.009 0.123	-0.248 -0.090 -0.082 -0.418 -0.128	-0.151 -0.118 -0.371 -0.132
MAR. APR. MAY	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055	-8.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1	198 -0.260 142 -0.223 371 -0.323 474 -0.519 152 -0.171 153 -0.076 144 0.119	-0.225 -0.197 -0.246 -0.522 -0.112 -0.001	-0.202 -0.163 -0.487 -0.126 0.009	-0.248 -0.090 -0.082 -0.413 -0.128 0.016	-0.151 -0.118 -0.371 -0.132 -0.622
MAR. APR. MAY	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 0.174	-8.163 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 -0.166 0.1 0.149 0.1 -0.027 -0.1	198 -0.260 142 -0.223 371 -0.323 474 -0.519 152 -0.171 153 -0.076 144 0.119	-0.225 -0.197 -0.246 -0.522 -0.112 -0.001 -0.074	-0.202 -0.163 -0.487 -0.126 0.009 0.123	-0.248 -0.090 -0.082 -0.418 -0.128 -0.160 -0.162 -0.142 -0.065	-0.151 -0.118 -0.371 -0.132 -0.022 -0.144
MAR. APR. MAY JUNE	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 0.174 0.140 0.100 -0.173	-8.163 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 -0.116 -0.1 0.166 0.1 0.149 0.3 -0.278 -0.3	198 -0.260 142 -0.223 371 -0.323 174 -0.519 192 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 377 -0.391	-0.225 -0.197 -0.246 -0.522 -0.112 -0.001 -0.124 -0.170 -0.352	-0.202 -0.163 -0.487 -0.126 0.009 0.123 0.138	-0.248 -0.090 -0.082 -0.413 -0.128 -0.166 -0.162 -0.142	-0.151 -0.118 -0.371 -0.132 0.622 0.144 0.116
MAR. APR. MAY JUNE	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.178 -0.218	-3.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 0.166 0.1 0.149 0.1 -0.278 -0.3 -0.169 -0.1	198 -0.260 142 -0.223 371 -0.323 174 -0.519 192 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 377 -0.391 103 -0.137	-0.225 -0.197 -0.246 -0.522 -0.112 -0.001 -0.124 -0.170 -0.352 -0.161	-0.202 -0.163 -0.487 -0.126 0.009 0.123 0.138 -0.125	-0.248 -0.090 -0.082 -0.418 -0.128 -0.160 -0.162 -0.142 -0.065	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139
MAR. APR. MAY JUNE JULY AUG.	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.178 -0.218 -0.105	-3.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 0.166 0.1 0.149 0.1 -0.278 -0.3 -0.169 -0.1 -0.102 -0.6	198 -0.260 142 -0.223 371 -0.323 474 -0.519 192 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 377 -0.291 103 -0.137 386 -0.105	-0.225 -0.197 -0.246 -0.522 -0.112 -0.001 -0.124 -0.170 -0.352 -0.161 -0.110	-0.202 -0.163 -0.487 -0.126 -0.126 -0.126 -0.125 -0.285 -0.068 -0.049	-0.248 -0.090 -0.082 -0.418 -0.128 -0.162 -0.142 -0.065 -0.193 -0.042 -0.034	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139 -0.278 -0.041 -0.040
MAR. APR. MAY JUNE JULY AUG.	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.178 -0.218 -0.280	-3.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 0.166 0.1 0.149 0.1 -0.278 -0.3 -0.169 -0.1 -0.383 -0.4	198 -0.260 142 -0.223 371 -0.323 474 -0.519 152 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 377 -0.291 100 -0.137 386 -0.105 143 -0.474	-0.225 -0.197 -0.246 -0.522 -0.112 -0.074 -0.124 -0.170 -0.352 -0.161 -0.346	-0.202 -0.163 -0.487 -0.126 -0.126 -0.125 -0.285 -0.968 -0.275	-0.248 -0.090 -0.082 -0.418 -0.128 -0.162 -0.142 -0.065 -0.192 -0.034 -0.123	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139 -0.278 -0.041 -0.040 -0.174
MAR. APR. MAY JUNE JULY AUG. SEP.	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.173 -0.218 -0.105 -0.280 -0.412	-3.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 -0.166 0.1 -0.149 0.3 -0.27 -0.1 -0.278 -0.3 -0.169 -0.1 -0.383 -0.4 -0.452 -0.4	198 -0.260 142 -0.223 371 -0.323 474 -0.519 152 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 377 -0.291 100 -0.137 386 -0.105 143 -0.474 145 -0.513	-0.225 -0.197 -0.246 -0.522 -0.112 -0.074 -0.124 -0.170 -0.352 -0.161 -0.146 -0.444	-0.202 -0.163 -0.487 -0.126 -0.126 -0.125 -0.285 -0.068 -0.044 -0.275 -0.282	-0.248 -0.090 -0.082 -0.418 -0.128 -0.162 -0.142 -0.065 -0.193 -0.034 -0.123 -0.101	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139 -0.278 -0.041 -0.040
MAR. APR. MAY JUNE JULY AUG.	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.178 -0.218 -0.105 -0.280 -0.412 -0.098	-0.163 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 -0.110 -0.1 -0.149 -0.1 -0.278 -0.3 -0.169 -0.1 -0.102 -0.0 -0.383 -0.4 -0.452 -0.4 -0.093 -0.6	198 -0.260 142 -0.223 371 -0.323 474 -0.519 152 -0.171 153 -0.076 144 0.119 147 -0.182 377 -0.291 103 -0.137 386 -0.105 443 -0.474 453 -0.513	-0.225 -0.197 -0.246 -0.522 -0.112 -0.074 -0.170 -0.352 -0.161 -0.146 -0.494 -0.011	-0.202 -0.163 -0.487 -0.126 -0.126 -0.125 -0.285 -0.068 -0.275 -0.282 -0.066	-0.248 -0.090 -0.082 -0.418 -0.128 -0.162 -0.142 -0.065 -0.193 -0.101 -0.001	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139 -0.278 -0.041 -0.040 -0.174
MAR. APR. MAY JUNE JULY AUG. SEP.	-0.118 -0.274 -0.523 -0.378 -0.115 -0.055 -0.174 -0.140 -0.173 -0.218 -0.105 -0.280 -0.412	-3.162 -0.1 -0.221 -0.1 -0.488 -0.3 -0.445 -0.4 -0.160 -0.1 -0.166 0.1 -0.149 0.3 -0.27 -0.1 -0.278 -0.3 -0.169 -0.1 -0.383 -0.4 -0.452 -0.4	198 -0.260 142 -0.223 371 -0.323 174 -0.519 152 -0.171 153 -0.076 144 0.119 140 0.154 147 -0.182 147 -0.187 108 -0.137 108 -0.105 143 -0.474 145 -0.513 178 -0.040 179 0.143	-0.225 -0.197 -0.246 -0.522 -0.112 -0.074 -0.124 -0.170 -0.352 -0.161 -0.146 -0.444	-0.202 -0.163 -0.487 -0.126 -0.126 -0.125 -0.285 -0.068 -0.044 -0.275 -0.282	-0.248 -0.090 -0.082 -0.418 -0.128 -0.162 -0.142 -0.065 -0.193 -0.034 -0.123 -0.101	-0.151 -0.118 -0.371 -0.132 -0.622 -0.144 -0.139 -0.278 -0.041 -0.040 -0.124 -0.041

Table VII. Cross-correlation values for figure 9.

FACIFIC OCEAN UHF AM 1979

Ц	0 1		2		3		4	
MAP.	-0.598	- 0. 603	-0.550	-0.591	-0.466	-0.426	-0.348	-0.274
	-0.545	-0.622	-6.690	-0.712	-0.543	-0.502	-0.415	-0.387
APP.	-0.639	-0.700	-0.730	-0.697	~0.603	-0.604	-0.567	-0.555
	-0.500	-0.534	-0.538	-0.535	-0.493	-0.508	-0.487	-0.435
MHY	-0.119	-0.228	-0.308	-0.365	-0.376	-0.409	-0.359	-0.290
	-0.188	-0.292	-0.371	-0.425	-0.449	-0.443	-0.301	-0.273
JUNE	-0.333	-0.293	-0.219	-0.254	-0.266	-0,325	-0.296	-0.177
	-0.173	-0.074	0.040	0.049	0.050	0.020	-0.014	-0.002
JUL	0.137	0.224	0.320	0.365	0.315	0.386	0.368	0.434
	0.042	0.039	9.927	0.002	-0.021	0.136	0.222	0.280
AUG.	-0.307	-0.369	-0.392	-0.427	-0.426	-0.372	-0.272	-0.227
	-0.250	-0.231	-0.188	-0.286	-0.342	-0.376	-0.366	-0.332
SEP.	-0.491	-0.440	-0.322	-0.430	-0.452	-0.336	-0.160	-0.207
	-0.411	-0.363	-0.275	-0.374	-0.415	-0.394	-0.318	-0.255
OCT.	-0.209	-0.256	-0.276	-0.282	-0.236	-0.015	-0.359	-0.179
	-0.252	-0.250	-0.221	-0.231	-0.190	-0.304	-0.381	-0.173
H07.	0.062	0.082	0.096	0.080	0.045	0.019	-0.016	0.095
1 1	。 5		6		7		8	
	o 5 -0.184	-0.206	6 50.218	-0.268	7 -0.229	-0.307	8 -0.389	-0.488
		-0.206 -0.240		-0.268 -0.227		-0.307 -0.227		-0.488 -0.192
	-0.184		50.218		-0.229		-0.389	
MAP.	-0.184 -0.334	-0.240	50.218 -0.119	-0.227	-0.229 -0.207	-0.227	-0.389	-0.192
MAP.	-0.184 -0.334 -0.514	-0.240 -0.395	-0.218 -0.119 -0.195	-0.227 -0.224	-0.229 -0.207 -0.231	-0.227 -0.146	-0.389 -0.147 -0.064	-0.192 -0.121
MAR. APR.	-0.184 -0.334 -0.514 -0.352	-0.240 -0.395 -0.311	50.218 -0.119 -0.195 -0.025	-0.227 -0.224 √0.323	-0.229 -0.207 -0.231 -0.391	-0.227 -0.146 -0.323	-0.389 -0.147 -0.064 -3.248 -0.043 -0.031	-0.192 -0.121 -0.240
MAR. APR.	-0.184 -0.334 -0.514 -0.352 -0.188	-0.240 -0.395 -0.311 -0.189	-0.218 -0.119 -0.195 -0.025 -0.170 -0.275 -0.170	-0.227 -0.224 +0.323 -0.041	-0.229 -0.207 -0.231 -0.391 0.079	-0.227 -0.146 -0.323 -0.062	-0.389 -0.147 -0.064 -3.248 -0.043 -0.031	-0.192 -0.121 -0.240 -0.099
MAR. APR. MAY JUNE	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060	-0.240 -0.395 -0.311 -0.189 -0.242	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030	-0.227 -0.224 +0.323 -0.041 -0.151 -0.140 -0.083	-0.229 -0.207 -0.231 -0.391 -0.079 -0.022	-0.227 -0.146 -0.323 -0.062 -0.028	-0.389 -0.147 -0.064 -3.248 -0.043 -0.031	-0.192 -0.121 -0.240 0.099 0.015
MAR. APR. MAY	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.008	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176	-0.227 -0.224 +0.323 -0.041 -0.151 -0.140 -0.083 -0.122	-0.229 -0.207 -0.231 -0.391 -0.079 -0.022 -0.091	-0.227 -0.146 -0.323 -0.062 -0.028 -0.067	-0.389 -0.147 -0.064 -3.248 -0.043 -0.031	-0.192 -0.121 -0.240 -0.099 -0.015 -0.029
MAP. APP. MAY JUNE TULY	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.008 0.436 0.314	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092	-0.227 -0.224 +0.323 -0.041 -0.151 -0.140 -0.083	-0.229 -0.207 -0.231 -0.391 -0.079 -0.022 -0.091 -0.113	-0.227 -0.146 -0.328 -0.062 -0.067 -0.095	-0.389 -0.147 -0.064 -3.248 -0.043 -0.031 -0.030 -0.063	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007
MAR. APR. MAY JUNE	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.008 0.436 0.314 -0.164	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222 -0.110	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047	-0.227 -0.224 \(\pi \).323 -0.041 -0.151 -0.140 -0.083 0.122 0.122 0.002	-0.229 -0.207 -0.231 -0.391 -0.022 -0.022 -0.113 -0.113 -0.124 -0.053	-0.227 -0.146 -0.323 -0.062 -0.067 -0.095 -0.145 -0.256 -0.068	-0.389 -0.147 -0.064 -0.248 -0.043 -0.030 -0.062 -0.062 0.235 0.343 0.073	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130
MAR. APR. MAY JUNE TULY AUG.	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.008 0.436 0.314 -0.164 -0.270	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222 -0.110 -0.130	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047 -0.006	-0.227 -0.224 \(\tau0.323\) -0.041 -0.151 -0.140 -0.083 \(0.122\) 0.122 \(0.002\) -0.001	-0.229 -0.207 -0.231 -0.391 -0.022 -0.022 -0.113 -0.113 -0.124 -0.053 -0.04	-0.227 -0.146 -0.323 -0.062 -0.067 -0.095 -0.145 -0.256 -0.068 -0.057	-0.389 -0.147 -0.064 -3.248 -0.031 -0.030 -0.062 -0.205 -0.343 -0.073 -0.118	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130 0.244 -0.013
MAP. APP. MAY JUNE TULY	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.002 0.436 0.314 -0.164 -0.270 -0.231	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222 -0.110 -0.130 -0.311	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047 -0.006 -0.356	-0.227 -0.224 \tau0.323 -0.041 -0.151 -0.140 -0.083 0.122 0.122 -0.002 -0.001 -0.358	-0.229 -0.207 -0.231 -0.391 -0.022 -0.021 -0.113 -0.340 -0.134 -0.237	-0.227 -0.146 -0.323 -0.062 -0.067 -0.395 -0.145 -0.256 -0.068 -0.057 -0.210	-0.389 -0.147 -0.064 -3.248 -0.031 -0.030 -0.062 -0.205 -0.343 -0.073 -0.123	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130 0.244 -0.013 -0.130
MAR. APP. MAY JOHE TOLY AUG. SEP.	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.002 0.436 0.314 -0.164 -0.270 -0.231 -0.134	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222 -0.110 -0.130 -0.311 -0.208	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047 -0.006 -0.356 -0.265	-0.227 -0.224 \(\tau.323\) -0.041 -0.151 -0.140 -0.083 \(\text{0.122}\) \(\text{0.002}\) -0.001 -0.358 -0.111	-0.229 -0.207 -0.231 -0.391 -0.022 -0.091 -0.113 -0.40 -0.134 -0.053 -0.237 -0.274	-0.227 -0.146 -0.323 -0.062 -0.067 -0.095 0.145 0.256 -0.068 -0.057 -0.210 -0.039	-0.389 -0.147 -0.064 -3.248 -0.031 -0.030 -0.062 -0.205 -0.343 -0.073 -0.123 -0.071	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130 0.244 -0.013 -0.108 0.108
MAR. APR. MAY JUNE TULY AUG.	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.002 0.436 0.314 -0.164 -0.270 -0.231 -0.134 0.038	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 -0.222 -0.110 -0.130 -0.208 -0.008	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047 -0.006 -0.356 -0.265 -0.043	-0.227 -0.224 \(\tau.323\) -0.041 -0.151 -0.140 -0.083 \(\tau.122\) \(\tau.002\) -0.001 -0.358 -0.111 -0.030	-0.229 -0.207 -0.231 -0.391 -0.022 -0.091 -0.113 -0.40 -0.134 -0.053 -0.237 -0.274 -0.010	-0.227 -0.146 -0.323 -0.062 -0.067 -0.395 0.145 0.256 -0.068 -0.057 -0.210 -0.099	-0.389 -0.147 -0.064 -3.248 -0.031 -0.030 -0.062 -0.235 -0.343 -0.073 -0.123 -0.049	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130 0.244 -0.013 -0.108 0.108 0.129
MAR. APP. MAY JOHE TOLY AUG. SEP.	-0.184 -0.334 -0.514 -0.352 -0.188 -0.189 -0.060 0.002 0.436 0.314 -0.164 -0.270 -0.231 -0.134	-0.240 -0.395 -0.311 -0.189 -0.242 -0.123 -0.012 0.323 0.222 -0.110 -0.130 -0.311 -0.208	-0.218 -0.119 -0.195 -0.225 -0.170 -0.275 -0.176 -0.030 -0.176 -0.092 -0.047 -0.006 -0.356 -0.265	-0.227 -0.224 \(\tau.323\) -0.041 -0.151 -0.140 -0.083 \(\text{0.122}\) \(\text{0.002}\) -0.001 -0.358 -0.111	-0.229 -0.207 -0.231 -0.391 -0.022 -0.091 -0.113 -0.40 -0.134 -0.053 -0.237 -0.274	-0.227 -0.146 -0.323 -0.062 -0.067 -0.095 0.145 0.256 -0.068 -0.057 -0.210 -0.039	-0.389 -0.147 -0.064 -3.248 -0.031 -0.030 -0.062 -0.205 -0.343 -0.073 -0.123 -0.071	-0.192 -0.121 -0.240 0.099 0.015 0.029 -0.007 0.130 0.244 -0.013 -0.108 0.108

Table VIII. Cross-correlation values for figure 10.

PAC. OCEAN UHF TO 2 AM 1979

KI	p 1		2		3		4	
JAN.	-0.054	-0.012	0.031	0.062	0.100	0.150	0.165	0.103
	-0.216	-0.290	-0.347	-0.350	-0.301	-0.264	-0.184	-0.327
FEB.	-0.453	-0.458	~0. 383	-0.404	-0.365	-0.415	-0.419	-0.494
	-0.410	-0.426	-0.339	-0.340	-0.302	-0.350	-0.365	-0.411
MAR.	-0.512	-0.564	-0.574	-0.507	-0.315	-0.232	-0.136	-0.079
	-0.585	-0.686	-0.737	-0.707	-0.484	-0.390	-0.268	-0.234
APR.	-0.615	-0.686	-0.726	-0.716	-0.646	-0.631	-0.577	-0.593
	-0.479	-0.528	-0.547	-0.579	-0.572	-0.561	-0.506	-0.461
MAY	-0.156	-0.288	-0.357	-0.407	-0.404	-0.397	-0.318	≁ 0. 268
	-0.330	-0.409	-0.457	-0.435	-0.473	-0.450	-0.319	-0.312
JUNE	-0.600	-0.541	-0.419	-0.470	-0.478	-0.523	-0.410	-0.264
	-0.466	-0.384	-0.245	-0.260	-0.237	-0.196	-0.117	-0.045
JULY	-0.149	-0.091	-0.004	-0.036	-0.060	0.121	0.246	0.263
	-0.119	-0.103	-0.061	-0.221	-0.304	-0.187	-0.071	-0.054
AUG.	-0.290	-0.302	-0.276	-0.361	-0.417	-0.436	-0.384	-0.336
	-0.275	-0.283	-0.261	-0.33 5	-0.357	-0.385	-0.368	-0.311
SEP.	-0.526	-0.544	-0.470	-0.551	-0.525	-0.434	-0.270	-0.234
	-0.517	-0.527	-0.483	-0.600	-0.629	-9.602	-0.499	-0.465
OCT.	-0.200	-0.272	-0.319	-0.322	-0.267	-0.335	-0.365	-0.286
	-0.244	-0.242	-0.214	-0.220	-0.175	-0.270	-0.330	-0.180
NOV.	0.019	0.043	0.063	0.057	0.039	0.036	0.026	0.095
	0.287	0.198	0.097	0.116	0.115	0.094	0.055	-0.035
DEC.	0.140	0.161	0.155	0.130	0.092	0.026	-0.040	-0.014
Ell	p 5		ŧ		7		8	
	•	-0.054		-0.074		-0.092		-0.134
	0.03 <i>6</i>	-0.054 -0.379	6 -0.122 -0.283	-0.074 -0.322	7 -0.027 -0.307	-0.092 -0.265	-0.149	-0.134 -0.175
JAN.	•		-0.122		-0.027	-0.265	-0.149 -0.194	-0.175
JAN.	0.03€ -0.41€	-0.379	-0.122 -0.283	-0.322	-0.027 -0.307	-0.265 -0.391	-0.149 -0.194 -0.308	-0.175 -0.350
JAN.	0.036 -0.416 -0.520	-0.379 -0.510	-0.122 -0.283 -0.445	-0.322 -0.467	-0.027 -0.307 -0.439	-0.265	+0.149 -0.194 -0.308 -0.261	-0.175 -0.350 -0.357
JAN. FEB.	0.036 -0.416 -0.520 -0.428	-0.379 -0.510 -0.474	-0.122 -0.283 -0.445 -0.476	-0.322 -0.467 -0.460	-0.027 -0.307 -0.439 -0.396	-0.265 -0.391 -0.334	+0.149 -0.194 -0.308 -0.261 -0.790	-0.175 -0.350 -0.357 -0.349
JAN. FEB.	0.036 -0.416 -0.520 -0.428 -0.018	-0.379 -0.510 -0.474 -0.063	-0.122 -0.283 -0.445 -0.476 -0.104	-0.322 -0.467 -0.460 -0.225	-0.027 -0.307 -0.439 -0.396 -0.213	-0.265 -0.391 -0.334 -0.267	+0.149 -0.194 -0.308 -0.261	-0.175 -0.350 -0.357
JAN. FEB. MAR.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184	-0.379 -0.510 -0.474 -0.063 -0.125	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053	-0.322 -0.467 -0.460 -0.225 -3.134	-0.027 -0.307 -0.439 -0.396 -0.213 -0.130	-0.265 -0.391 -0.334 -0.267 -0.203	+0.149 -0.194 -0.308 -0.261 -0.390 -0.115	-0.175 -0.350 -0.357 -0.349 -0.151
JAN. FEB. MAR.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053 -0.366	-0.322 -0.467 -0.460 -0.225 -0.134 -0.339	-0.027 -0.307 -0.439 -0.396 -0.213 -0.130 -0.281	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198	+0.149 -0.194 -0.308 -0.261 -0.290 -0.115 -0.114	-0.175 -0.350 -0.357 -0.349 -0.151
JAN. FEB. MAR. AFR.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053 -0.366 -0.445	-0.322 -0.467 -0.460 -0.225 -3.194 -0.333 -0.532	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.281 -0.575	-0.265 -0.391 -0.334 -0.267 -0.263 -0.198 -0.514	+0.149 -0.194 -0.308 -0.261 -0.290 -0.115 -0.114 -3.422	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151
JAN. FEB. MAR. AFR.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053 -0.366 -0.445 -0.287	-0.322 -0.467 -0.460 -0.225 -3.194 -0.339 -0.532 -0.232	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.281 -0.575 -0.130	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.514 -0.125	+0.149 +0.194 +0.308 +0.261 +0.290 +0.115 +0.114 +0.422 +0.110	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.289 -0.087
JAN. FEB. MAR. AFR. MAY	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053 -0.366 -0.445 -0.287 -0.423	-0.322 -0.467 -0.460 -0.225 -0.194 -0.339 -0.532 -0.232 -0.293	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.281 -0.575 -0.135	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.514 -0.125 -0.116	+0.149 +0.194 +0.308 +0.261 +0.290 +0.115 +0.114 +0.422 +0.110 +0.083	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.289 -0.097
JAN. FEB. MAR. AFR. MAY	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.166 -0.273 -0.113 0.020 0.243	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161	-0.122 -0.283 -0.445 -0.476 -0.104 -0.053 -0.366 -0.445 -0.287 -0.423 -0.153	-0.322 -0.467 -0.460 -0.225 -0.194 -0.339 -0.532 -0.232 -0.233	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.281 -0.575 -0.135 -0.168	-0.265 -0.391 -0.334 -0.267 -0.205 -0.198 -0.514 -0.125 -0.116 -0.117 -0.013 -0.056	-0.149 -0.194 -0.308 -0.261 -0.390 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.289 -0.097 -0.097
JAN. FEB. MAR. APR. MAY JUNE JULY	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.035	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.422 -0.193 0.030 -0.008 -0.249	-0.322 -0.467 -0.460 -0.225 -0.134 -0.532 -0.232 -0.233 -0.197 -0.048 -0.256	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.201 -0.575 -0.190 -0.135 -0.168 -0.029 -0.074 -0.230	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.514 -0.125 -0.116 -0.117 -0.013	-0.149 -0.194 -0.308 -0.261 -0.390 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.289 -0.097 -0.078
JAN. FEB. MAR. APR. MAY JUNE JULY	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.033	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 0.027 0.123	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.422 -0.193 0.030 -0.008 -0.249	-0.322 -0.467 -0.460 -0.225 -0.134 -0.532 -0.232 -0.233 -0.197 -0.048	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.575 -0.196 -0.135 -0.168 -0.029 -0.074 -0.230	-0.265 -0.334 -0.367 -0.267 -0.203 -0.198 -0.514 -0.125 -0.116 -0.117 -0.013 -0.056 -0.160	-0.149 -0.194 -0.308 -0.261 -0.390 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042 -0.008	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.289 -0.097 -0.078 -0.007 -0.167
JAN. FEB. MAR. APR. MAY JUNE JULY AUG.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.033 -0.262 -0.227	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 0.027 0.123 -0.135 -0.210 -0.173	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.193 -0.008 -0.008 -0.248 -0.137 -0.108	-0.322 -0.460 -0.225 -0.134 -0.338 -0.532 -0.232 -0.293 -0.197 -0.048 -0.256 -0.127 -0.087	-0.027 -0.307 -0.439 -0.396 -0.201 -0.575 -0.135 -0.168 -0.029 -0.074 -0.230 -0.056	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.125 -0.116 -0.117 -0.013 -0.056 -0.160 -0.028 -0.017	-0.149 -0.194 -0.308 -0.261 -0.390 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042 0.008 -0.031 -0.078 0.061	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.997 -0.097 -0.078 -0.007 -0.167 -0.187 -0.027
JAN. FEB. MAR. APR. MAY JUNE JULY AUG.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.035 -0.262 -0.262 -0.262	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.125 -0.173 -0.268	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.193 -0.008 -0.008 -0.243 -0.137 -0.108 -0.138	-0.322 -0.460 -0.225 -0.194 -0.339 -0.232 -0.293 -0.197 -0.001 -0.048 -0.256 -0.127 -0.087 -0.392	-0.027 -0.307 -0.439 -0.396 -0.201 -0.575 -0.135 -0.168 -0.029 -0.074 -0.230 -0.356 -0.356	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.125 -0.116 -0.117 -0.013 -0.056 -0.160 -0.028	-0.149 -0.194 -0.308 -0.261 -0.790 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042 -0.078 -0.078	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.997 -0.097 -0.078 -0.007 -0.167 -0.187
JAN. FEB. MAR. APR. JUNE JUNE JULY AUG. SEP.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.166 -0.273 -0.113 0.020 0.243 -0.035 -0.262 -0.262 -0.227 -0.168 -0.326	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.123 -0.123 -0.123	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.193 -0.008 -0.249 -0.108 -0.108 -0.338 -0.446	-0.322 -0.467 -0.460 -0.225 -0.194 -0.532 -0.233 -0.197 -0.048 -0.256 -0.127 -0.087 -0.392 -0.518	-0.027 -0.307 -0.439 -0.396 -0.201 -0.575 -0.135 -0.168 -0.029 -0.074 -0.230 -0.107 -0.356 -0.320 -0.451	-0.265 -0.334 -0.367 -0.263 -0.198 -0.125 -0.116 -0.117 -0.018 -0.056 -0.160 -0.028 -0.017 -0.167 -0.244	-0.149 -0.194 -0.308 -0.261 -0.390 -0.115 -0.114 -0.422 -0.110 -0.081 -0.042 0.008 -0.031 -0.078 0.061	-0.175 -0.350 -0.357 -0.349 -0.151 -0.151 -0.997 -0.097 -0.078 -0.007 -0.167 -0.187 -0.027
JAN. FEB. MAR. APR. JUNE JUNE JULY AUG. SEP.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.035 -0.262 -0.262 -0.326 -0.326 -0.153	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.123 -0.123 -0.173 -0.268 -0.403 -0.175	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.287 -0.193 -0.008 -0.249 -0.137 -0.108 -0.388 -0.446	-0.322 -0.467 -0.460 -0.225 -0.194 -0.232 -0.232 -0.293 -0.197 -0.048 -0.256 -0.127 -0.087 -0.392 -0.518 -0.098	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.281 -0.575 -0.190 -0.135 -0.168 -0.029 -0.074 -0.230 -0.107 -0.356 -0.451 -0.012	-0.265 -0.334 -0.367 -0.263 -0.198 -0.125 -0.116 -0.117 -0.018 -0.028 -0.160 -0.028	-0.149 -0.194 -0.308 -0.261 -0.590 -0.115 -0.114 -0.422 -0.110 -0.081 -0.005 -0.031 -0.078 0.061 0.032 0.038	-0.175 -0.350 -0.357 -0.349 -0.151 -0.289 -0.097 -0.078 -0.007 -0.167 -0.187 -0.027 -0.068
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.383 -0.186 -0.273 -0.113 0.020 0.243 -0.035 -0.262 -0.227 -0.168 -0.326 -0.153 -0.007	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.123 -0.123 -0.173 -0.268 -0.403 -0.403	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.193 -0.193 -0.008 -0.249 -0.193 -0.193 -0.198 -0.198	-0.322 -0.467 -0.460 -0.225 -0.194 -0.532 -0.233 -0.197 -0.048 -0.256 -0.127 -0.087 -0.998 -0.117	-0.027 -0.307 -0.439 -0.396 -0.213 -0.190 -0.201 -0.575 -0.168 -0.029 -0.074 -0.230 -0.107 -0.056 -0.451 -0.012	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.116 -0.117 -0.013 -0.056 -0.160 -0.028 -0.017 -0.167 -0.244 -0.023 0.131	-0.149 -0.194 -0.308 -0.261 -0.790 -0.115 -0.114 -0.422 -0.110 -0.081 -0.078 -0.078 -0.078 -0.078	-0.175 -0.350 -0.357 -0.349 -0.151 -0.289 -0.097 -0.078 -0.007 -0.107 -0.187 -0.027 -0.027 -0.068 -0.017
JAN. FEB. MAR. APR. JUNE JUNE JULY AUG. SEP.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.382 -0.186 -0.273 -0.113 0.020 0.243 -0.033 -0.262 -0.227 -0.168 -0.326 -0.153 -0.153 -0.155	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.123 -0.173 -0.268 -0.403 -0.403 -0.232	-0.122 -0.283 -0.445 -0.476 -0.1053 -0.366 -0.445 -0.193 -0.008 -0.249 -0.108 -0.108 -0.108 -0.108 -0.108 -0.108 -0.108	-0.322 -0.467 -0.460 -0.225 -0.194 -0.532 -0.233 -0.197 -0.048 -0.256 -0.127 -0.087 -0.932 -0.349	-0.027 -0.307 -0.439 -0.396 -0.201 -0.575 -0.135 -0.168 -0.029 -0.074 -0.230 -0.451 -0.162 -0.397	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.116 -0.117 -0.013 -0.056 -0.160 -0.028 -0.017 -0.167 -0.244 -0.023 -0.131 -0.299	-0.149 -0.194 -0.308 -0.261 -0.790 -0.115 -0.114 -0.422 -0.110 -0.081 -0.078 -0.078 -0.078 -0.078 -0.078 -0.078	-0.175 -0.350 -0.357 -0.349 -0.151 -0.289 -0.097 -0.078 -0.078 -0.107 -0.187 -0.027 -0.027 -0.027 -0.019 -0.019 -0.009
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT.	0.036 -0.416 -0.520 -0.428 -0.018 -0.184 -0.577 -0.383 -0.186 -0.273 -0.113 0.020 0.243 -0.035 -0.262 -0.227 -0.168 -0.326 -0.153 -0.007	-0.379 -0.510 -0.474 -0.063 -0.125 -0.517 -0.433 -0.247 -0.364 -0.161 -0.027 -0.123 -0.123 -0.123 -0.173 -0.268 -0.403 -0.403	-0.122 -0.283 -0.445 -0.476 -0.104 -0.366 -0.445 -0.193 -0.193 -0.008 -0.249 -0.193 -0.193 -0.198 -0.198	-0.322 -0.467 -0.460 -0.225 -0.194 -0.532 -0.233 -0.197 -0.048 -0.256 -0.127 -0.087 -0.998 -0.117	-0.027 -0.307 -0.439 -0.396 -0.201 -0.575 -0.135 -0.168 -0.029 -0.074 -0.230 -0.451 -0.162 -0.397	-0.265 -0.391 -0.334 -0.267 -0.203 -0.198 -0.116 -0.117 -0.013 -0.056 -0.160 -0.028 -0.017 -0.167 -0.244 -0.023 0.131	-0.149 -0.194 -0.308 -0.261 -0.790 -0.115 -0.114 -0.422 -0.110 -0.081 -0.078 -0.078 -0.078 -0.078	-0.175 -0.350 -0.357 -0.349 -0.151 -0.289 -0.097 -0.078 -0.078 -0.107 -0.187 -0.027 -0.027 -0.068 -0.017 -0.099

Table IX. Cross-correlation values for figure 11.

FAC. OCEAN 2 AM ON 1979

	Kp 1		2		3			
IAN	10.244	-0.189					4	
7.,,	-0.075				-9.069	0.070	0.202	6 .=
FEF	-0.631					-0.131	-0.214	
	-0.031					-0.117	-0.180	-0.146
MAR	0.720 0.349	- •			-0.338			
*****	-0.127					-0.428		- · · - ·
APR				-0.295		-0.340		
111 15	-0.454 -0.356			-0.419	-0.327	-0.314		-6.335
MAY				-0.282	-0.195	-0.222		-0.234
****			-0.146	-0.189	-0.211	-6.244	-0.236	-0.119
Tisks	-0.197 E -0.233			-0.335	-0.328	-0.384		-0.172
2011			-0.199	-0.153	-0.093	-0.204		-0.278
JUL.	-0.015		0.112	0.699	0.065	-0.055		-0.140
300			0.339	0.304	0.188	0.197	-0.165	-0.106
AUG.	9.134	0.076	-0.019	0.017	0.045	0.276	9.167	0.182
HUG.		-0.305	-0.296	-0.249	-8.184	-0.022	0.389	0.416
055	-0.275	-0.171	~0.046	-0.056	-0.058	0.021	0.110	0.187
SEF.		-0.325	-0.342	-0.373	-0.334	-0.225	0.054	Ø.133
000	~0.199	-0.277	-0.331	-0.365	-0.343	-0.259	-0.074	0.076
OCT.		-0.055	-0.084	-0.107	-0.111		-0.138	-0.008
	-0.059	-0.075	-0.084	-0.042	0.015	-0.077	-0.031	0.063
NOV.		0.140	0.163	0.205	9.212	-0.138	-0.294	-0.008
	0.258	0.299	0.295	0.339	0.324	0.164	0.081	0.292
DEC.	0.140	0.161	0.155	0.130	0.092	0.400	0.437	0.430
				,.	ಟ-ಟನ್ನ	0.026	-0.040	-0.014
* .	p 5		€		7		ક	
JAN.	0.096	0.077		_			•	
	-0.055	-0.140	0.055	0.104	0.136	0.130	0.108	0.098
FEB.	-0.049	-0.140 -0.127	-0.194	-0.213	-0.199	-0.216	-0.212	-0.067
	-0.422	-0.127	-0.124	-0.138	-0.173	-0.175	-0.163	-0.037
MAE.	-0.403		-0.342	-0.415	-0.441	-0.391	-0.326	-0.415
	-0.334	-0.373 -0.284	-0.324	~0.249	-0.130	-0.251	-0.342	-0.390
APR.	-0.176	-0.284	-0.199	-0.181	-0.138	-0.142	-0.062	-0.052
	0.003		-0.089	-0.687	-0.079	-0.012	0.042	0.065
MAY	-0.091	0.007 -0.049	0.011	-0.052	-0.107	-0.048	0.007	0.000
	-0.178	-0.166	-0.001	0.022	0.036	0.040	0.040	0.026 0.086
JUHE	-0.010	-0.166	-0.145	-0.230	-0.259	-0.213		-0.038 -0.098
	-0.036		-0.153	-0.185	-0.181	-0.173		-0.019
JULY	0.171			-0.090	-0.064	-0.090		-0.019 -0.058
, ,,	0.409	0.172	0.154	0.094	0.014	9.167	0.189	
AUG.		0.399	0.352	0.322	0.254			0.183 0.454
11001	0.205	0.269	9.256	0.259	0.242	0.325	0.3 5 8	
SEP.	0.203	0.306	0.340	0.342	0.210	0.348	0.322	0.356
	0.219	9.185	0.129	0.067	-0.030	0.040	0.322	0.329
00T.	0.125	9.146	0.151	0.047	-0.095	0.013	0.105	0.164
~~!	0.141	0.170	0.180	8.157	9.193	8.125	0.129	0.163
nov.	0.477	0.290	0.270	0.286	0.288	0.273	0.219	0.138
	0.394	0.492	9.477	0.491	0.478	0.474	0.437	0.048
DEC.	0.394	0.402	0.367	0.465	0.511	0.563	0.556	0.280
	0.010	0.012	0.004 -	0.006	-0.015	0.151	0.279	0.548 0.334
							~	U. 534

Table X. Cross-correlation values for figure 12.

PAC. OCEAN UHF 15-DAY 1979

Eq	o 1		2		3		4	
JAN.	-0.325	-0.229	-0.094	-0.080	-0.051	0.156	0.327	0.203
	-0.149	-0.105	-0.051	0.005	0.091	0.147	0.176	0.096
FEB.	-0.114	-0.284	-0.417	-0.408	-0.355	-0.273	-0.182	-0.248
	-0.679	-0.664	-0.446	-0.479	-0.467	-0.590	-0.571	-0.754
MAR.	-0.360	-0.338	-0.247	-0.261	-0.231	-0.254	-0.255	-0.262
	-0.674	-0.735	-0.788	-0.773	-0.523	-0.380	-0.209	-0.119
APR.	-0.504	-0.612	-0.703	-0.640	-0.462	-0.439	-0.391	-0.408
	-0.781	-0.810	-0.809	-0.832	-0.813	-0.802	-0.751	-0.731
MAY	-0.242	-0.309	-0.313	-0.322	-0.293	-0.968	-0.366	-0.193
	-0.244	-0.403	-0.520	-0.585	-6.590	-0.536	-0.414	-0.429
JUNE	-0.548	-0.523	-0.479	-0.467	-0.434	-0.488	-0.347	-0.239
*111	-0.639	-0.552	-0.343	-0.408	-0.419	-0.531	-0.572	-0.314
SOLI	-0.243 0.133	-0.134 0.205	-0.004 0.304	-0.012 0.253	-0.019 0.109	0.088	0.165	0.153
AUG.	-0.137	-0.323	-0.372	-0.482	-0.503	0.294 -0.353	0.378	0.432
nou.	-0.390	-0.354	-0.372	-0.402	-0.303 -0.309	-0.333	-0.182 -0.327	-0.149 -0.227
SEP.	-0.056	-0.067	-0.053	-0.304	-0.234	-0.333	-0.074	-0.27 -0.036
- L	-0.804	-0.913	-0.887	-0.858	-0.741	-0.615	-0.378	-0.006
OCT.	-0.295	-0.305	-0.301	-0.346	-0.353	-0.492	-0.583	-0.5 5 8
• • • •	-0.274	-0.426	-0.445	-0.454	-0.335	-0.362	-0.303	-0.039
NOV.	-0.116	-0.089	-0.057	-0.032	0.003	-0.074	-0.151	0.136
	0.407	0.401	0.370	0.397	0.345	0.357	0.329	0.248
DEC.	-0.639	-0.552	-0.243	-0.408	-0.419	-0.531	-0.573	-0.314
F	p 5		6		7		8	
F	p 5		6		7		8	
	0.144	0.100	0.065	0.131	0.181	0.195	0.186	6.16.
Jhd.	0.144	-0.205	0.065 -0.276	-0.131	0.181 -0.391	-0.220	0.186 -0.314	-9.290
	0.144 -0.022 -0.277	-0.205 -0.233	0.065 -0.276 -0.152	-0.191 -0.216	0.181 -0.891 0.246	-0.220 -0.113	0.186 -0.314 0.049	-0.190 0.177
JHH.	0.144 -0.022 -0.277 -0.775	-0.205 -0.233 -0.839	0.065 -0.276 -0.152 -0.794	-0.191 -0.216 -0.798	0.181 -0.391 -0.246 -0.714	-0.220 -0.113 -0.635	0.166 -0.314 -0.049 -0.626	-0.290 -0.177 -0.707
Jhd.	0.144 -0.022 -0.277 -0.775 -0.253	-0.205 -0.233 -0.839 -0.262	0.065 -0.276 -0.152 -0.794 -0.254	-0.191 -0.216 -0.798 -0.302	0.181 -0.391 -0.246 -0.714 -0.110	-0.220 -0.113 -0.635 -0.21	0.186 -0.314 -0.049 -0.626 -0.158	-0.290 -0.177 -0.707 -0.251
JHH. FEE. MAF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020	-0.205 -0.233 -0.839 -0.262 -0.087	0.065 -0.276 -0.152 -0.794 -0.354 -0.142	-0.191 -0.216 -0.798 -0.302 -0.298	0.181 -0.791 0.246 -0.714 -0.710 -0.274	-0.220 -0.113 -0.635 -0.23 -0.33	0.186 -0.314 -0.049 -0.626 -0.156 -0.561	-0.290 -0.177 -0.707 -0.251 -0.541
JHH.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191	0.065 -0.276 -0.152 -0.794 -0.254 -0.142 0.091	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201	0.181 -0.791 -0.246 -0.714 -0.110 -0.274 0.16	-0.220 -0.113 -0.635 -0.21 -0.762 0.381	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411	-0.290 -0.177 -0.707 -0.251 -0.541 -0.341
THH. FEE. MAF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689	-0.205 -0.203 -0.809 -0.262 -0.087 -0.191	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.091 -0.697	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745	0.181 -0.791 -0.246 -0.714 -0.110 -0.274 -0.769	-0.220 -0.113 -0.635 -0.21 -0.362 -0.361 -0.716	0.186 -0.314 -0.049 -0.626 -0.155 -0.561 -0.411 -0.663	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546
JHH. FEE. MAF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689 -0.035	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.091	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.091 -0.697 -0.155	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351	0.181 -0.791 -0.246 -0.714 -0.10 -0.274 -0.76 -0.769 -0.438	-0.220 -0.113 -0.635 -0.21 -0.361 -0.716 -0.453	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411 -0.669 -0.345	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546 -0.279
JHR. FEE. MAF. HAF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.689 -0.689 -0.689	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.831 -0.395	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.091 -0.697 -0.155 -0.362	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351 -0.257	0.181 -0.791 -0.246 -0.714 -0.110 -0.274 -0.769 -0.438 -0.172	-0.220 -0.113 -0.635 -0.21 -0.361 -0.716 -0.453 -0.161	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411 -0.669 -0.345 -0.45	-0.290 0.177 -0.707 -0.251 -0.541 -0.546 -0.279 -0.101
JHR. FEE. MAF. HEF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689 -0.035	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.091	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.697 -0.155 -0.362 -0.364	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351 -0.257 -0.315	0.181 -0.791 -0.714 -0.716 -0.274 -0.769 -0.488 -0.172 -0.495	-0.220 -0.113 -0.635 -0.21, -0.361 -0.716 -0.451 -0.162 -0.152	0.186 -0.314 -0.049 -0.626 -0.153 -0.561 -0.411 -0.663 -0.345 -0.345 -0.461	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091
JHR. FEE. MAF. HEF.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689 -0.355 -0.359 +0.126 -0.070	-0.205 -0.233 -0.839 -0.262 -0.067 -0.191 -0.727 -0.395 -0.280	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.091 -0.697 -0.155 -0.362	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351 -0.287 -0.315 -0.094	0.181 -0.791 -0.246 -0.714 -0.110 -0.274 -0.769 -0.438 -0.172	-0.220 -0.113 -0.635 -0.21 -0.361 -0.716 -0.451 -0.162 -0.152 -0.172	0.186 -0.314 -0.049 -0.626 -0.153 -0.561 -0.411 -0.069 -0.345 -0.345 -0.661 -0.125	-0.290 -0.177 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053
JHH. FEE. MAF. HAF. MAG.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689 -0.355 -0.359 +0.126 -0.070	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.091 -0.395 -0.280 -0.027	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.155 -0.362 -0.364 0.016	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351 -0.257 -0.315	0.181 -0.791 -0.714 -0.714 -0.274 -0.274 -0.769 -0.498 -0.172 -0.297 -0.192	-0.220 -0.113 -0.635 -0.21, -0.361 -0.716 -0.451 -0.162 -0.152	0.186 -0.314 -0.049 -0.626 -0.153 -0.561 -0.411 -0.663 -0.345 -0.345 -0.461	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053 -0.057
JHH. FEE. HAF. HAF. HAF. JULY	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.094 -0.689 -0.035 -0.359 -0.126 -0.070 -0.108	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.091 -0.395 -0.280 -0.027	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.155 -0.362 -0.364 -0.016	-0.191 -0.216 -0.798 -0.302 -0.298 -0.201 -0.745 -0.351 -0.297 -0.315 -0.094 -0.018	0.181 -0.791 -0.714 -0.716 -0.274 -0.769 -0.498 -0.172 -0.495 -0.172 -0.192	-0.220 -0.113 -0.635 -0.210.381 -0.716 -0.483 -0.162 -0.152 -0.172 -0.009 -0.011	0.186 -0.314 -0.049 -0.626 -0.155 -0.561 -0.411 -0.069 -0.345 -0.345 -0.661 -0.125 -0.045	-0.290 -0.177 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053 -0.041
JHM. FEE. MAF. HEF. MAY JUNE JULY AUG.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.589 -0.689 -0.355 -0.126 -0.108 0.456 -0.106 -0.101	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.75	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.155 -0.362 -0.364 -0.016 -0.016 -0.182 -0.270 -0.185	-0.191 -0.216 -0.798 -0.302 -0.298 -0.291 -0.351 -0.297 -0.315 -0.094 -0.005 -0.137 -0.123	0.181 -0.791 -0.246 -0.714 -0.10 -0.274 -0.769 -0.438 -0.172 -0.436 -0.172 -0.466 -0.169 -0.046	-0.220 -0.113 -0.635 -0.21. -0.361 -0.716 -0.451 -0.162 -0.152 -0.172 0.009	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411 -0.669 -0.345 -0.345 -0.125 -0.045 -0.045	-0.290 -0.177 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053 -0.087 -0.041 0.132 0.120
JHM. FEE. MAF. HEF. MAY JUNE JULY AUG.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.039 -0.035 -0.126 -0.126 -0.106 -0.106 -0.101	-0.205 -0.203 -0.809 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.075 -0.084	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.155 -0.362 -0.364 -0.016 -0.016 -0.182 -0.270 -0.185 -0.175	-0.191 -0.216 -0.798 -0.302 -0.298 -0.291 -0.351 -0.355 -0.094 -0.018 -0.005 -0.137 -0.123 -0.005	0.181 -0.791 -0.714 -0.716 -0.274 -0.769 -0.498 -0.172 -0.297 -0.192 -0.192 -0.194 -0.169 -0.046 -0.046 -0.046	-0.220 -0.113 -0.695 -0.210.381 -0.766 -0.451 -0.152 -0.172 -0.005 -0.011 -0.005 -0.141 -0.160	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411 -0.665 -0.345 -0.662 -0.045 -0.125 -0.045 -0.117	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053 -0.037 -0.041 -0.132
JHH. FEB. MAF. HAP. MAY TUNE JULY AUG. SEM.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.039 -0.035 -0.126 -0.126 -0.108 -0.106 -0.101 -0.188	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.75 -0.084 -0.274	0.065 -0.276 -0.794 -0.354 -0.354 -0.697 -0.155 -0.362 -0.364 -0.016 -0.185 -0.185 -0.185 -0.185	-0.191 -0.216 -0.798 -0.302 -0.298 -0.351 -0.351 -0.394 -0.018 -0.005 -0.137 -0.123 -0.055 -0.532	0.181 -0.791 -0.246 -0.714 -0.374 -0.769 -0.438 -0.172 -0.257 -0.192 -0.046 -0.169 -0.045 -0.144 -0.587	-0.220 -0.113 -0.635 -0.210.361 -0.716 -0.451 -0.152 -0.172 -0.005 -0.011 -0.005 -0.141 -0.235	0.186 -0.314 -0.049 -0.626 -0.156 -0.561 -0.411 -0.665 -0.345 -0.662 -0.125 -0.045 -0.117 -0.164 -0.117	-0.290 -0.177 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.053 -0.087 -0.041 0.132 0.120 0.155
JHH. FEB. MAF. HAP. MAY TUNE JULY AUG. SEM.	0.144 -0.022 -0.277 -0.775 -0.253 -0.029 -0.689 -0.689 -0.126 -0.126 -0.108 -0.108 -0.101 -0.101 -0.188 -0.415	-0.205 -0.203 -0.809 -0.262 -0.087 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.075 -0.084 -0.263	0.065 -0.276 -0.152 -0.794 -0.354 -0.142 -0.697 -0.155 -0.364 -0.016 -0.016 -0.185 -0.185 -0.185 -0.270	-0.191 -0.216 -0.798 -0.302 -0.298 -0.351 -0.351 -0.394 -0.018 -0.005 -0.137 -0.123 -0.055 -0.532 -0.233	0.181 -0.791 -0.246 -0.714 -0.174 -0.769 -0.472 -0.192 -0.192 -0.192 -0.194 -0.169 -0.169 -0.144 -0.787 -0.123	-0.220 -0.113 -0.635 -0.210.381 -0.716 -0.485 -0.162 -0.172 -0.005 -0.011 -0.005 -0.140 -0.233 -0.121	0.186 -0.314 -0.649 -0.626 -0.156 -0.561 -0.411 -0.665 -0.125 -0.125 -0.125 -0.117 -0.164 -0.111	-0.290 -0.177 -0.707 -0.254 -0.546 -0.546 -0.279 -0.101 -0.091 -0.093 -0.087 0.041 0.122 0.120 0.155 -0.113
JHN. FEB. MAF. HAP. MAY TONE JULY AUG. SEM.	0.144 -0.022 -0.277 -0.775 -0.253 -0.029 -0.689 -0.689 -0.126 -0.126 -0.108 -0.108 -0.101 -0.101 -0.188 -0.415 -0.210	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.75 -0.084 -0.075	0.065 -0.276 -0.152 -0.794 -0.354 -0.991 -0.697 -0.362 -0.364 -0.016 -0.185 -0.270 -0.185 -0.270 -0.275 -0.292 -0.292	-0.191 -0.216 -0.798 -0.302 -0.238 -0.201 -0.745 -0.351 -0.394 -0.018 -0.005 -0.137 -0.123 -0.055 -0.233 -0.256	0.181 -0.791 -0.246 -0.710 -0.274 -0.769 -0.432 -0.192 -0.192 -0.192 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193	-0.220 -0.113 -0.635 -0.210.381 -0.766 -0.452 -0.152 -0.172 -0.015 -0.015 -0.142 -0.236	0.186 -0.314 -0.626 -0.156 -0.561 -0.411 -0.666 -0.125 -0.125 -0.045 -0.117 -0.164 -0.117 -0.164 -0.117	-0.290 -0.177 -0.707 -0.541 -0.546 -0.579 -0.101 -0.091 -0.053 -0.037 0.041 0.122 0.120 0.155 -0.113 0.042
JHH. FEB. MAF. HAP. MAY TUNE JULY AUG. SEM.	0.144 -0.022 -0.277 -0.775 -0.253 -0.020 -0.039 -0.126 -0.126 -0.106 -0.106 -0.101 -0.101 -0.188 -0.415 0.445 0.440	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.274 -0.263 -0.274	0.065 -0.276 -0.794 -0.354 -0.354 -0.697 -0.362 -0.364 -0.016 -0.185 -0.270 -0.185 -0.270 -0.185 -0.275 -0.323 -0.347 -0.512	-0.191 -0.216 -0.798 -0.302 -0.238 -0.297 -0.315 -0.994 -0.005 -0.137 -0.123 -0.095 -0.532 -0.256 -0.512	0.181 -0.791 -0.246 -0.710 -0.274 -0.769 -0.472 -0.192 -0.192 -0.192 -0.193 -0.193 -0.193 -0.193 -0.193	-0.220 -0.113 -0.635 -0.210.361 -0.716 -0.451 -0.162 -0.172 -0.009 -0.011 -0.005 -0.141 -0.299 -0.121 -0.256 -0.430	0.186 -0.314 -0.649 -0.656 -0.156 -0.561 -0.411 -0.665 -0.125 -0.125 -0.125 -0.117 -0.164 -0.117 -0.164 -0.117	-0.290 -0.177 -0.707 -0.251 -0.541 -0.546 -0.279 -0.101 -0.091 -0.091 -0.097 -0.041 0.122 0.120 0.155 -0.110 0.042 0.13
JHM. FEB. MAF. MAF. MAY TONE JULY AUG. SEM. OCT. NOW.	0.144 -0.022 -0.277 -0.775 -0.253 -0.029 -0.689 -0.689 -0.126 -0.126 -0.108 -0.108 -0.101 -0.101 -0.188 -0.415 -0.210	-0.205 -0.233 -0.839 -0.262 -0.087 -0.191 -0.727 -0.395 -0.280 -0.027 -0.044 -0.350 -0.184 -0.75 -0.084 -0.075	0.065 -0.276 -0.794 -0.354 -0.354 -0.697 -0.362 -0.364 -0.016 -0.185 -0.270 -0.185 -0.270 -0.185 -0.275 -0.323 -0.347 -0.512	-0.191 -0.216 -0.798 -0.302 -0.238 -0.201 -0.745 -0.351 -0.394 -0.018 -0.005 -0.137 -0.123 -0.055 -0.233 -0.256	0.181 -0.791 -0.246 -0.710 -0.274 -0.769 -0.432 -0.192 -0.192 -0.192 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193 -0.193	-0.220 -0.113 -0.635 -0.210.381 -0.766 -0.452 -0.152 -0.172 -0.015 -0.015 -0.142 -0.236	0.186 -0.314 -0.626 -0.156 -0.561 -0.411 -0.666 -0.125 -0.125 -0.045 -0.117 -0.164 -0.117 -0.164 -0.117	-0.290 -0.177 -0.707 -0.541 -0.546 -0.579 -0.101 -0.091 -0.053 -0.037 0.041 0.122 0.120 0.155 -0.113 0.042

